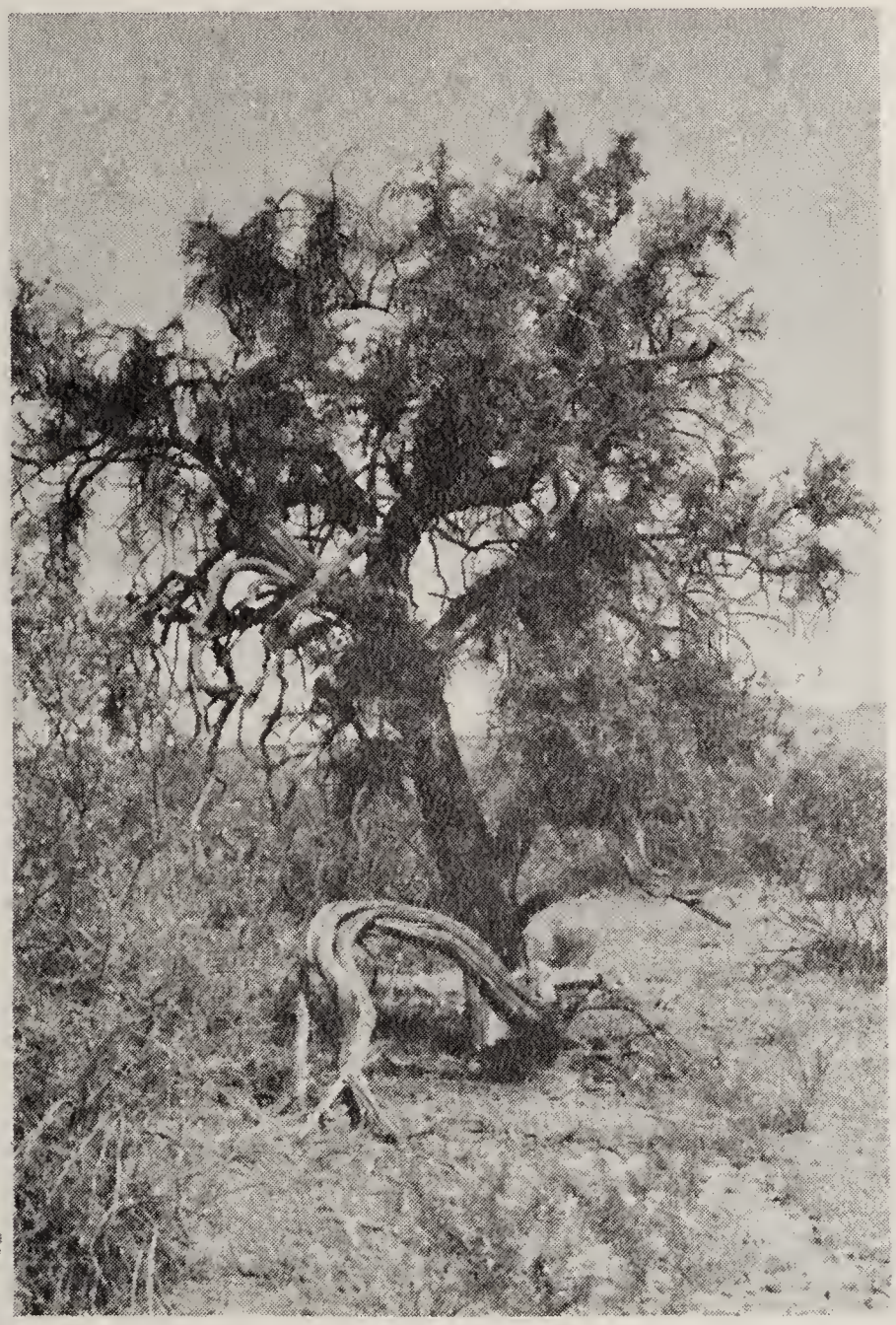
SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXV January, 1971 No. 1



REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXV | January, 1971 | No. 1

Arizona Cactus and Native Flora Society

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Table of Contents

Editor's Notes 3
Arizona Cactus, *Coryphantha recurvata* 4
Desert Trees and Shrubs, *Condalia globosa* 5
Aspects of the Desert 7
Arizona Wildflower, *Castilleja chromosa* 8
Book Review 10
Mexican Cactus, *Neolloydia conoidea* 11
Garden Activities 12

Cover: Bitter Condalia
(see page 5)

Desert Botanical Garden of Arizona

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Editor's Notes

1970 was another active year. A few of the highlights were these:

In January, a nature trip with Garden members to Big Bug Creek, south of Prescott. In February, a lecture at Orangewood retirement community; our 23rd Annual Cactus Show. In March, the start of spring flowers in the desert. In April, four garden clubs from different parts of Arizona made special trips to the Garden; and in April was the dedication of the Richter Memorial Library. In May, Edgar Lamb, one of England's foremost writers on cactus, lectured here on the growing of cactus in England. In June, an address delivered to the Tucson Cactus and Botanical Society, and attendance at the Desert Biology Institute's sessionss. July and August involved our usual summer projects, and in September, an extended trip with visits to botanical gardens in St. Louis, Chicago, Milwaukee, Winnipeg, Vancouver, San Francisco, Los Angeles and San Marino. In October, a lecture for the Phoenix Bonsai Society, and a welcome visit from Dr. George Rauh of the University of Heidelberg, who addressed our Cactomaniacs on the cacti of Peru and Chile. In November we began our fall classes on desert plants, with an enrollment of 98; the Fall Show of the Phoenix Bonsai Society was held here for the first time, and was very successful. In December, we combined our nature trip to Payson with Christmas - tree - cutting (having picked up our cutting permits at the Ranger Station).

We wonder if you attended any of our 1970 events, and if you enjoyed them. We plan Garden activities for your pleasure, such as the following events in Spring, 1971:

On January 5th, February 2nd and March 2nd, Cactomaniacs meetings.

The Winter Classes on desert plants begin on January 6th.

The 24th Annual Cactus Show runs from February 21st through the 28th.

Spring Classes in Desert Plants begin on March 10th, and the new classes on the Preservation of Desert Flowers, given by Janet Alsever, begin on April 19th.

With this Bulletion you will receive a copy of the Classifications List for the 24th Annual Cactus Show, to be held here at the Garden. As you know, the Garden's co-sponsor for the event is the Phoenix Gazette. We expect to have another fine show this year. Cactus plants constitute about one-fourth of the show's entries. Succulents, arrangements, photographs and paintings combine to make this a most unusual show of desert features.

"Cactus - napping" has again hit the pages of Arizona newspapers. This time it involved Organ Pipe Cactus which were dug up without permits, sold to nurseries at ridiculously low prices, and, before the authorities learned of the proceedings, sold to a number of unwary homeowners. The Agricultural and Horticultural Commission has confiscated all the plants, 101 of them, and will return them to the desert when they are no longer needed for evidence against the several persons fac-

(Continued on Page 6)

Arizona Cactus

GOLDEN-CHESTED BEEHIVE CACTUS

Coryphantha recurvata

Cactaceae

This is an easy-to-handle cactus that is found growing on steep grassy hillsides along both sides of the Mexican border, west of Nogales. Why is it so easy to handle? Because its central spine is recurved to its base and its pectinate radial spines are appressed to the plant, offering no sharp points to pierce your ungloved hand.

At first this plant is hard to find, hidden as it is in the grasses at 4000 to 6000 ft. Then you begin to notice the large mounds, about a foot high and three feet in diameter, made up from as many as forty or fifty heads. Only then do the single plants begin to claim your attention.

On one of our exploration trips a few years ago in the area east of Hermosillo, Sonora, Rod McGill found a plant of C. recurvata with 96 heads. It was two feet high and four feet in diameter. As far as we know, none larger has been reported. (Incidentally, this plant was ridden with borers, although it appeared quite healthy outwardly.)

This specimen of *C. recurvata* is 6 inches high, 3 inches across.

Coryphantha recurvata grows slowly. It blooms sparsely in May, with yellow flowers, and bears a few spherical green fruits, one-half inch in diameter and three-quarters inch long, containing light brown seeds in a sour juice.

The outstanding aid to identification of this cylindrical-depressed plant is its lovely recurved central spines which are yellow at first and later turn gray. They are about three-quarters inch long. The single plant is four to six inches in diameter and four to ten inches tall. The nipples, obscured by the spines, are one-half inch long, and bear a groove on the upper side.

Horticulturally, it is better to move a single plant of C. recurvata rather than a cluster. A single stem reestablishes itself much more easily than a cluster, and clusters seem to lose all vigor and die out a few years after being moved.

Engelmann described the plant in 1856 in Proc. Am. Acad. 3:266 as **Mammillaria recurvispina**, later renaming it **M. recurvata** in Trans. St. Louis Acad. 2:202, 1863. Britton & Rose placed it in the genus Coryphantha as **C. recurvata** in Cactaceae 4:27, 1923.

TYPE LOCALITY: Sierra del Pajarito, Prima Alta, Sonora, Mexico.

DISTRIBUTION: West of Nogales and the Tumacacori Mtns., Arizona, to southeast of Hermosillo, Sonora.

REFERENCES

Benson, Cacti of Arizona
Bravo, Las Cactaceas de Mexico
Earle, Cacti of the Southwest

—WHE

BITTER CONDALIA
Condalia globosa Johnst.

Rhamnaceae
Buckthorn Family

Condalia globosa in form is a large, divaricately branched shrub or tree, having a broad dense crown. Each twig on a branchlet is tipped with a slender sharp spine. Large specimens range up from 4.5 to 6 meters (15 to 20 ft.) in height and in some instances almost as broad. Trunk diameter in these specimens may reach .6 meters (2 ft.). The bark on the larger branches and trunk is brown, light gray, or brownish gray and that of the trunk is fissured and shredded. The relatively few leaves are small, 4 to 12 mm. long and 2 to 5 mm. wide. These are single or clustered in alternate positions along the twig. They are oblanceolate to spatulate in shape with entire margins and with three to four pair of lateral veins that are visible on the underside of the leaf.

Flowering commences in autumn following the summer rains. The small flowers are solitary or in few-flowered clusters, in the leaf axils or on spurs. Petals are absent and there are five deciduous sepals and five stamens. Bitter Condalia is well named, for the black berry-like fruits are very bitter. They are small, 3.5 to 5 mm. in diameter, and globose or subglobose in shape. The single-stone fruits are juicy, but the pericarp is thin. They would be deciduous except that birds relish them in spite of their bitterness and harvest them prior to fruit drop. Seed is ovoid, acute at one end and rounded at the other, tan, and about 4 mm. long.

Condalia globosa ranges from 200 to 750 meters (1,000 to 2,500 ft.) in elevation in the Lower Sonoran Zone. It grows on gravelly slopes and flats and on dry sandy plains and along washes in southwestern

A very old specimen of Bitter Condalia, found in the Littlehorn Mtns. on the east side of the Kofa Mtns. in southwest Arizona.

A more shrubby form of C. *globosa* than the one shown on page 5.

Arizona, southeastern California, and Sonora and Baja California, Mexico. In Arizona it is recorded from the Kofa, Castle Dome, Littlehorn, Growler, Ajo and Sierra Blanca mountains of western Pima and southern Yuma counties.

Propagation by seed requires pretreatment to overcome an impervious seed coat. This can be achieved by soaking the seed overnight in water that has been brought to boiling. Growth rate in seedlings is rapid, but is barely noticeable in old plants. While this species is very drought hardy, it will benefit from supplemental water during extended dry periods. It should be planted in full sun and be given adequate room to develop the broad crown.

Bitter Condalia is a rare tree having a limited but scattered distribution. The larger specimen trees may well be some of the oldest living plants of the southwestern desert.

REFERENCES:

Benson & Darrow, Trees and Shrubs of the Southwestern Deserts.
Kearney & Peebles, Arizona Flora.
Little, E. L., Southwestern Trees.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.

—JHW

EDITOR'S NOTES

(Continued from Page 3)

ing prosecution. Buyers of the cacti will find themselves minus the cacti and minus the price they paid for them.

We'd like to warn you again that you should never buy a cactus native to Arizona unless it carries with it a permit tag and the name of the seller. The state Agricultural and Horticultural Commission is increasing enforcement of the law. It has added to its staff and enlisted the support of the State Highway Department and other law agencies in order to apprehend violators.

———

Dear Editor,

You haven't mentioned the most important event of 1970.

On December 26th, Lucille Smith and W. Hubert Earle were married at All Saints Church in Phoenix.

Yours,
The Garden Staff

ASPECTS OF THE DESERT

People who haven't seen the reality refuse to believe the intense colors in photographs of our desert sunsets. They feel sure there's some trick photography involved. But we give you our word that this picture is no exaggeration, and sunsets like this are frequent sights in Arizona.

CLIFFORD M. SCHROEDER

On November 28th, the Garden lost a very good friend. Dr. Clifford M. Schroeder, who was a physicist by profession, and, by avocation, a superb horticulturist whose cactus and succulents were often better specimen plants than those here at the Garden. It is a rare man who excels both in the physical sciences and in the natural sciences, and an even rarer one who is a creative artist. Clifford Schroeder was such a man. He joined the faculty of Arizona State University in 1957, where he later became Associate Professor of Physics. In June of the following year he became a member of the Garden, and starting in 1958 was an exhibitor every year in the Annual Cactus Show. That, in itself, would show his interest in the Garden, but even more notable is the fact that every single year, from 1958 through 1970, Cliff won one or more awards in a variety of categories that included specimen plants, species collections, educational exhibits, collages, weaving, and other forms of art.

Cliff was more than just a collector of plants. He grew them from seeds and from cuttings, with an innate sense of what to do and how to do it, combined with a study of all the available material on each separate plant.

Cliff's wife, Joy Lee Schroeder, has given to the Garden the majority of his beautifully tended plants. It was also her suggestion that a fund be established in his name for the purpose of purchasing plants for the Garden, as the most appropriate memorial. A good number of Cliff's friends have already contributed in memory of his great interest in growing succulent plants, and we expect that the Clifford M. Schroeder Memorial Fund will grow, as will the plants bought from the Fund, in continuing memory of this vastly talented and dedicated man.

Arizona Wildflower

PAINTBRUSH
Castilleja chromosa
Scrophulariaceae
Figwort Family

Of the thirteen species of Paintbrush in Arizona, **C. chromosa** has the greatest range. It is common in chaparral at 2000 ft., and common among the pines and spruces at 8000 ft. The specific name, **chromosa**, indicates that it is one of the more colorful members of the genus. The color, however, is not in the flowers of any Paintbrush, but in the large, bright bracts that clothe the insignificant flowers.

C. chromosa is a herbaceous perennial, with several stems, ten to twenty inches tall, rising from the same woody root-crown. The leaves are one to three inches long, cleft, with narrow lobes, and both stems and leaves are light gray-green, covered with soft silvery hairs. The flowering heads, or spikes, are about two inches long, and are comprised of very small greenish-yellow flowers surrounded by reddish calyces and large bright red bracts, so that the general appearance is one of brilliance.

This particular Paintbrush blooms from March to August, depending on altitude. It is found as far north as British Columbia, and as far south as southern California, Arizona and New Mexico. In Arizona it ranges from Apache and Mohave counties in the north to Gila, Pima and Maricopa counties in the south.

Although it has a perfectly good root system of its own, the Paintbrush is partially root-parasitic. All Paintbrushes contribute to the forage value of the range where they are abundant, but **C. chromosa** has a peculiar tendency to take up large quantities of selenium from the soil, and may become highly toxic to browsing animals.

REFERENCES

Kearney & Peebles, Arizona Flora
McDougall, Grand Canyon Wild Flowers
Munz, California Desert Wildflowers

—LD

Paintbrush is closeup, showing the soft, fine hairs on the large bracts.

The narrow leaves of this Paintbrush seem to copy the silhouette of the flower heads.

CHANGE IN CLASS SCHEDULE

Please note that Janet Alsever's Classes in Flower Preservation which begin on May 12th will be held at 1 p.m. and 7 p.m. instead of 3 and 7 as previously announced.

Book Review

Wild Edible Plants of the Western United States, by Donald R. Kirk, illustrated by Janice Kirk, Naturegraph Publishers, Healdsburg, Calif. 307 pp. plus index. $3.95

A nice addition to your "car library" — or "hip pocket library."

The 302 entries cover nearly 2000 species of edible plants, excluding mushrooms "because they are not particularly nourishing, and many are very difficult to identify positively". This remark of Kirk's is typical of his sense of responsibility to his readers. He includes in his book only the clearly identifiable plants he himself has eaten, and where there may be side effects, or where one part of the plant may be poisonous, he gives detailed information.

The book is well organized. First is the section on plants found throughout the West, then separate sections for the Northwest, Southwest, and Rocky Mountain states. Each plant is numbered, with numbered illustrations on separate pages. Of course, they almost have to be on separate pages in a compact book like this, but Mr. Kirk makes a virtue of necessity by suggesting that "you can practice naming them by looking at the picture and see if you can guess the correct name. This practice will make recognition quicker in the field." It will, too.

Most of Janice Kirk's line drawings are excellent. A few look like nothing at all, but what can you do with a plant that is insignificant? On the whole, the illustrations are quite satisfactory.

Kirk opens his section on the Southwest with an interesting theory: ". . .except for the plants found throughout the West, this geographical area has the largest number of edible plants. One reason for this is that the climate of the Southwest is more diverse than that of the Northwest or the Rockies. Another possible reason is that many of the Indians of the Southwest were agriculturists to a greater or less degree. Farming allowed them a certain amount of leisure time as is evidenced by the elaborate ceremonial rituals that have developed in the Southwest. Having some leisure time, they were probably motivated to experiment with native plants to see which were edible and worth cultivating. As a matter of fact, a number of native plants listed in this chapter, such as the tepary bean (**Phaseolus acutifolius**), were once grown by various Indian tribes, and some are still being cultivated."

The exclusively Southwestern plants run from Nos. 217 through 291 in the book, but they include many species, ranging from one (Saguaro) to the buckwheats with 121 species, all edible.

It's well known that such things as pine nuts and prickly pear fruit are edible, but did you know that milkweed fruit is edible raw or cooked?

You've heard about mesquite bean flour, but Kirk tells that screwbean mesquite pods, which are even sweeter than the common honey mesquite pods, can be made into an excellent sweet syrup. (Try some on pancakes?) And if you have an ironwood tree, collect the seeds and roast them. They taste like peanuts.

A final, fascinating item about jojoba (or goat-nut): "Roast the seeds and grind the kernels together with the yolk of a hard boiled egg; boil this pasty mass in water for several minutes; add sugar and cream or milk; flavor with vanilla for a savory drink. Of course, if you are a purist you can drink it black!"

So says Mr. Kirk. But why the egg yolk? Why hard boiled? We intend to try this recipe, anyway. Someday.

—LD

Mexican Cactus

CONE CACTUS
Neolloydia conoidea

Cactaceae

Cone Cactus is a lovely little single plant that becomes cespitose as it ages. It bears porrect black spines that are quite attractive against the white woolly top of the plant. They stand at right angles to the plant but are upright as they grow out of the meristem.

This short cone-shaped cactus is most often found branched at the base, with stems up to five inches tall, yet we have found single plants up to nine inches tall among split rocks. Cone Cactus has beautiful light-to-dark-petaled purple flowers two to two and a half inches across, with many attractive yellow filaments, orange anthers, and light yellow stigma, style and stigma lobes. The dull yellow globose fruit is mottled with red, but on aging it becomes purply and then brown. This is an identifying characteristic which Britton & Rose used in erecting the genus Neolloydia, setting the plant apart from Mammillaria and Coryphantha.

N. conoidea was first described by de Candolle in Mem. Mus. Hist. Nat. Paris 17:112, 1828 as **Mammillaria conoidea.** It has since acquired eleven published synonyms, before finally being placed in the genus Neolloydia by Britton & Rose, in Cactaceae, 1923.

While still a single-stemmed plant, it is an easy plant to grow, but growers have trouble with it when it becomes cespitose, as it then becomes susceptible to rot. Many cactus fanciers in cool climates overcome this difficulty by grafting **N. conoidea** onto another cactus, so that the clustered head will be kept well off the ground and thus away from rot-inducing moisture.

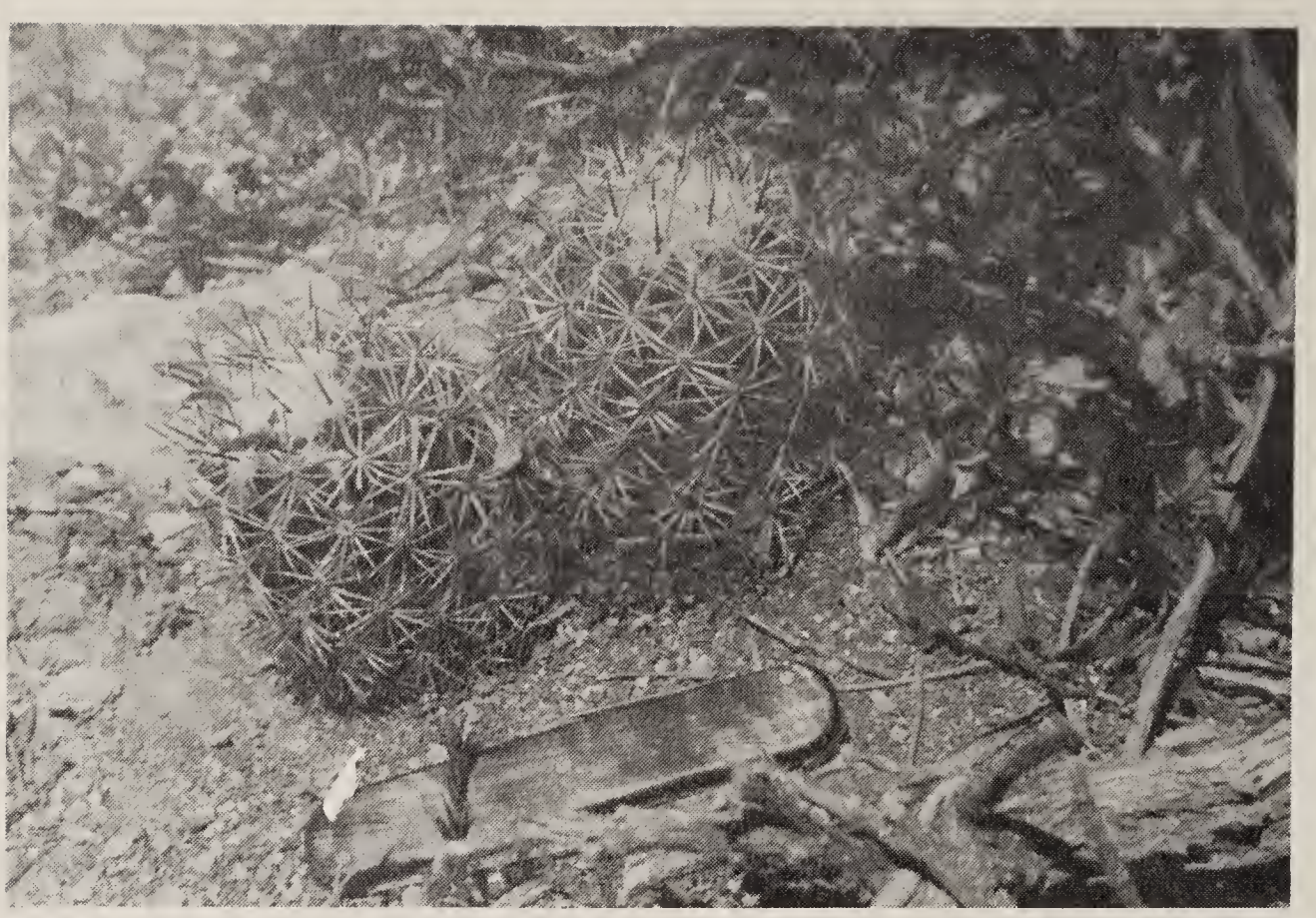
TYPE LOCALITY: Mexico

DISTRIBUTION: States of Zacatecas to Queretaro. Found on rocky hillsides, and mesas at 5000-6000 ft. elevation, usually in the open or under low bushes.

REFERENCES

Bravo, Las Cactaceas de Mexico
Britton & Rose, Cactaceae

—WHE



N. conoidea found near Cadereyta, central Queretaro, Mexico. Compare with pocket knife in foreground for size.

GARDEN ACTIVITIES

JANUARY

Tues.	5th	CACTOMANIACS—"Desert Safari", A. W. Mollison	8:00 P.M.
Wed.	6th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs.	7th	LECTURE—Arizona Birds	3:00 P.M.
Sat.	9th	NATURE TRIP—Canyon Lake (60 miles)	8:30 A.M.
Tues.	12th	BONSAI SOCIETY—Anatomy of a Tree	7:30 P.M.
Wed.	13th	CLASSES—Succulent Plants	3 & 8 P.M.
Thurs.	14th	LECTURE—Arizona Scenics	3:00 P.M.
Wed.	20th	CLASSES—Culture of Succulent Plants	3 & 8 P.M.
Thurs.	21st	LECTURE—Collecting in Mexico	3:00 P.M.
Tues.	26th	BONSAI SOCIETY Workshop—Needle Tree Demonstration	7:30 P.M.
Wed.	27th	CLASSES—Desert Trees & Shrubs	3 & 8 P.M.
Thurs.	28th	LECTURE—Arizona Cacti	3:00 P.M.

FEBRUARY

Tues.	2nd	CACTOMANIACS meeting	8:00 P.M.
Wed.	3rd	CLASSES—Cultivation of Trees & Shrubs	3 & 8 P.M.
Thurs.	4th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	6th	NATURE TRIP—Sierra Estrella Mtns. (30 miles)	8:30 A.M.
Tues.	9th	BONSAI SOCIETY—Panel Discussion	7:30 P.M.
Wed.	10th	CLASS (afternoon) FIELD TRIP—New River	8:30 A.M.
Thurs.	11th	LECTURE—Arizona Trees	3:00 P.M.
Sat.	13th	CLASS (evening) FIELD TRIP—New River	8:30 A.M.
Sat.	20th	ENTRIES DUE FOR CACTUS SHOW	5:00 P.M.
Sun.	21st	through Sun., 28th—24th ANNUAL CACTUS SHOW	dly. 9-5 P.M.
Tues.	23rd	BONSAI SOCIETY Workshop—Non-needle Tree Demonstration	7:30 P.M.

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Table of Contents

Editor's Notes 15
Johnson's Pineapple Barrel, *Echinomastus johnsonii* 16
Trixis californica 17
Aspects of the Desert 19
Book Review 20
"Agave" Cactus, *Leuchtenbergia principis* 22
Yellow Flax, *Linum puberulum* 23
Garden Activities 24

Cover: Stapelia nobilis

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Editor's Notes

The 24th Annual Cactus Show will be held this month from February 21st through the 28th. Since last month many prospective exhibitors have been phoning us for additional information. Classification lists were included with your copies of the January Bulletin.

Many regular exhibitors of leaf succulent plants have reported severe damage to plants during the bad freeze we had at the beginning of January, so there may be fewer entries in that category, but we can confidently predict more entries in the many other categories.

We have to count on many volunteers to help us with the Show. If you have half a day or a full day free to donate to the Garden, please phone us at 947-2800. We can use you as host or hostess, guard, guide, salesperson, etc. Even if you can't do volunteer work, be sure to visit the Show and bring your friends!

Many friends and relatives are giving, in lieu of flowers, checks to the Garden in memory of departed loved ones. Gifts have been made for such specific purposes as the purchase of needed books for the Library, new plants for the Garden, Garden improvements,, needed buildings, rest shelters, bordered pathways, and research programs.

Unfortunately, we have recently lost several active members: Dr. Clifford Schroeder (see article in January Bulletin); Sandy (Mrs. Hector) Moir, who brought the charm of the Hawaiian Islands to her recent home in Paradise Valley, and was a weekly visitor to the Garden who gave many books to our Library; Ed Stocks, who grew plants and exhibited in our Cactus Show for many years, and who, from his many years in the Bureau of Indian Affairs, was one of the very few people who spoke both the Hopi and Navajo languages; and, finally, Mr. M. A. Natanson, who lived near Apache Junction and spent part of his time at the Boyce Thompson Arboretum, but specialized in growing Golden Barrel cactus commercially. We will certainly miss these friends and the wisdom they always put at the Garden's disposal.

The number 1354 is good news for the Garden. That is the total number of members we have as of February 1st, the highest in the history of the Garden, with members in the United States, Canada, Mexico, and twenty other countries. This is an accomplishment when you consider the fact that we have never had a membership drive since the garden reopened in 1946 after World War II. Our members speak of the Garden to others who then become new members. All students in our classes are members. Our percentage of "drop-outs" is smaller than that of similar gardens.

Back in 1946 we had 19 members. In 1956 we had 406, and in 1966 we had 775. Now, five years later we have 1354. Quite a rapid and stable climb.

We've already had a lot of calls about the outlook for desert wildflowers this spring. Sorry to say, it doesn't look good. A hard

(Continued on page 21)

JOHNSON'S PINEAPPLE BARREL

Echinomastus johnsonii

Cactaceae

So many of our smaller cacti have a history of frequent name changes. Maybe that is due to their convenient size—they can conveniently be transported to a botanist's desk and observed to the extent that some minor detail becomes a reason for putting a plant into another genus. This has happened so often to this minature barrel.

Dr. J. E. Johnson, an enthusiastic amateur naturalist, found this plant near St. George, Utah, in 1871 and showed it to Dr. C. C. Parry who was then on the Clarence King Exploration of the 40th Parallel. Parry turned the specimens collected at that time over to Dr. George Englemann, who named the plant **Echinocactus johnsoni** because of the discoverer's "zeal for the development of the natural history of his region".

In 1896 Coulter thought it should be more accurately called **Echinocactus johnsoni octocentrus.** 1922 saw it assigned to **Ferocactus johnsoni** in Cactaceae by Britton and Rose.

J. P. Hester had an article in the Cactus and Succulent Journal (Vol. V, No. 7, Jan. 1934) suggesting that this **Ferocactus johnsonii** "should be classed with the genus Echinomastus". When E. M. Baxter published his California Cactus (1935) he took this advice and called the plant **Echinomastus johnsonii.**

In 1945 W. Taylor Marshall placed it as **Thelocactus johnsonii,** but he reinstated it as **Echinomastus johnsonii** in his book Arizona's Cactuses, 1950.

Dr. Lyman Benson carried it as **Echinocactus johnsonii** in his Cacti of Arizona, 1950, but in his revised third edition, 1969, it is **Neolloydia johnsonii.**

This is a lovely little plant to be knocked around so much by botanists. It is an easy one to grow at lower elevations, requiring little care. It is the earliest flowering small barrel in Arizona. The flowers are magenta to red, two to three inches in diameter, appearing on the apex of the plant in late March or early April.

E. johnsonii is a cylindrical barrel, eight to twelve inches tall and three to five inches thick. It has many dark red to purple (sometimes yellow) heavy spines concealing the dark green body of the plant. Central spines are five to eight, while the spreading radials number ten to twelve. Fruit is dry, light green, three-quarters inch long, and splits along the sides to expose the finely reticulated black seed.

The early-flowering Chartreuse Barrel,

Because of its size and general shape, *E. johnsonii* is called Pineapple Barrel.

E. johnsonii var. lutescens has striking chartreuse flowers with deep red-mahogany throats, much sought after by photographers. This plant is found among the Arizona Joshua trees, and from this area westward into southern Nevada and southward to Death Valley, California.

Distribution of **E. johnsonii** is on hills and alluvial fans of the desert 1500-3500 elevation, western Arizona; Death Valley, California; Clark County, Nevada; Washington County, Utah.

Type locality: St. George, Utah.

REFERENCES

Baxter, E. M., California Cactus
Benson, L., The Cacti of Arizona
Britton & Rose, Cactaceae
Earle, Cacti of the Southwest
Englemann, Cactaceae of Clarence King's Exploration on the 40th Parallel
Jaeger, Desert Wild Flowers

—WHE

Desert Trees and Shrubs

CALIFORNIA TRIXIS
Trixis californica Kellogg

Compositae
Sunflower Family

Trixis californica is a low, rounded, herbaceous shrub which is woody at the base. It is profusely branched with leafy stems and slender branchlets. The bark is yellowish-gray. Height ranges from 30 to 90 cm. (1 to 3 ft.). Leaves are dark green, rigid, and sparingly toothed or entire along the margin. In alternate positions along the stem, the leaves are simple, lanceolate to oblong in shape, and with acute to acuminate tips. They are rigid and short petiolate or sessile to the stems. Glands are present on the lower surface of the leaf. Leaf length ranges from 2.8 to 10 cm. and the breadth from 6 to 20 mm. Flowering commences in early spring and may extend throughout the summer. The corymbose heads have 9 to 12 clustered flowers. Corollas are bilabiate, yellow, and about 10 mm. long. The outer lip of the corolla is three toothed and the inner lip is two cleft. Anthers are sagittate (arrow head shaped). Fruit is a slender, cylindrical achene measuring 5 to 8 mm. in length. It is densely glandular. The seed has a pappus of numerous yellowish bristles.

Trixis californica is found primarily in the arid portions of the Sonoran Zone up to an elevation of 4,500 ft. It grows on rocky hills and in canyons in full sun, but more often under the canopy of Palo Verde, Ironwood, or Mesquite trees. Distribution is widespread from western Texas extending across New Mexico, Arizona, and into southern California and also in northern Mexico. In Arizona it is to be seen in Coconino, Yavapai, Maricopa, Pima, Pinal, Cochise, and Yuma counties.

The bright yellow Trixis flowers are about an inch in diameter.

While Trixis may be lacking somewhat in appeal as an ornamental shrub due to its small size and unobtrusiveness except when in flower, it still merits consideration for a desert garden. The seed requires no pretreatment and can be collected when ripe to be broadcast where desired. It thrives best in situations having partial shade and once established becomes very drought hardy. During years of heavy spring rainfall it is covered with small yellow flowers. These are followed by a profusion of seed which become air borne to be dispersed by wind.

REFERENCES:
Kearney and Peebles, Arizona Flora.
Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert.

—JHW

At right: Seed heads of *T. californica* at various stages of maturity.

Below: A single Trixis shrub. It is about three feet high and close to six feet across.

ASPECTS OF THE DESERT

On the Arizona-Mexico border, 140 miles SSW of Phoenix, is Organ Pipe National Monument, named for the Organ Pipe Cactus found here at its northernmost extension. The Monument is over 500 square miles in area and contains a surprising variety of plants, birds and animals.

Book Review

Wild Flowers of The United States, Volume Four, The Southwestern States, by Harold William Rickett. Published by McGraw Hill for The New York Botanical Garden. Volume Four, in three parts, 801 plus xii pp. $52.50.

I have been looking forward to this volume of "Wild Flowers of The United States" for several years. (This review is going to be written in the first person for reasons that will be apparent.) It is the fourth of six "volumes", each in reality two or three large books, that will, when finished, cover the wildflowers of the entire continental United States. This volume alone covers three thousand species.

Rickett, in his introduction, says the book is intended for "the enthusiast for wild flowers, the amateur naturalist, the interested tourist," and, what makes **me** highly qualified to talk about this book, for "the amateur with little or no training". You can even drop the words "little or". I am exclusively self-taught in the enthusiastic superficial way of most laymen who just want to know the names of the plants they see on picnics or on hikes. So this book, according to the author, is meant for me. It's aimed right in my direction, but has it hit the target? Let's see.

There is a serious attempt in this series to use only the simplest language possible in descriptions. Well, yes. But I personally don't find it much help to subsitute "paired" for "opposite" in regard to the position of leaves on the stem. (It's incorrect, besides.) And if I'm about to spend $52.50 for this Southwestern volume, I'm interested enough in our wildflowers to have learned that hirsute means hairy. I'm afraid that Rickett, himself far above amateur status, feels somewhat condescending toward our ilk. Does he really think he has to say "aquatic plants — plants growing in water"?

Just the same, this attempt at simplicity deserves at least two cheers. And it succeeds reasonably well, especially in the keys, but from time to time there are jarring inconsistencies in the "help for the amateur" method, and some of them are really jaw-dropping.

Wouldn't you welcome something called "Short Cuts for the Amateur"? Me, too. But Paragraph One begins, "It is well to get acquainted first with the large and ubiquitous daisy family. . ." The **daisies?** Those hundreds of lookalike Darned Yellow Composites? A lot of pretty knowledgeable amateurs call them DYC's and let it go at that. What on earth is the man thinking of? Probably working on the theory that if you learn brain surgery you can easily remove a splinter from your finger. And he's not consistent here, either. Later, in Book 3, he says, "The identification of composites is not easy". Right you are, Mr. R.

These inconsistencies, and some are not large, bother me. If a book is "limited to herbaceous wild flowers, excluding cacti" why include twelve oddly assorted cacti, or shrubs like Desert Lavender and Paperbag Bush? And when the author breaks his self-made rules, which he certainly has a right to do, his clumsy apologies build a cumulative impression that the basic plan for this huge and expensive series wasn't clearly thought out at the beginning of the project.

I wanted to make a practical test of the simplified keys, so I hunted down, or keyed out, two plants. One was that common weed we know hereabouts as Mustard Grass.

I started with the chart on page 13. Nice and easy. I followed it step by step until it told me my plant was in Section VI. But

where was Section VI? I had to go back to the table of contents to find that it began on page 200. (Why wasn't the page number on the chart?)

On page 200 a clear, short key sent me to the Mustard Family on page 205. Here the Mustards were divided into yellow-flowered and others. Mine had yellow flowers, so I quickly skimmed through a short-described list of thirteen, not a key, and landed in the genus Sisymbrium. But then again the omission of page numbers. I had to leaf through, not a long job, but a bit annoying, and found the genus on page 214. There were only six psecies, and there was no problem in deciding I had a specimen of **Sisymbrium irio.** A reference to plate 71. A look at plate 71, and good grief! The leaves, which are pretty important in identification, are almost invisible, the flowers not in focus, and the plant in the photograph is oddly sprawly, not upright as are most Mustard Grass plants. In short, a poor picture.

All of this should indicate to the reader who has followed me on my hunt that the keys work nicely and that there's at least one bad picture.

I wish that were all. But it is disappointingly clear to a well - wisher that a good few of the 248 color plates are inadequate, and an unhappily large number of the individual shots (some plates have as many as a dozen) are quite poor. The datura looks like a crumpled piece of paper instead of the large trumpet it is. And the yellow - flowered puncture - vine, or bullhead, such a common thing, appears with white petals that are yellow only toward the center. Why?

You can blame the photo editor for the poor choice of pictures, but who is to blame for the inferior job of color printing? It is sometimes good, sometimes so bad that I feel like weeping or snarling, or both. Colors off-register to the point of blurring details on some of the delicate flowers. Colors on some plates so unnatural that all the shades of red in penstemons are one shade of something like blood. And the leaves of a California poppy came out peacock blue. Honestly! **Elodea canadensis**, eelgrass, takes the prize. It is a green - black blob of nothing.

The printing was done in England, and here at the Garden we have a number of recent books from England with superb color reproduction, so there was no excuse for a sloppy job. I tell you, if I were in charge, heads would roll!

On balance, though, the book rates more plus marks than minus.

Here ends the amateur's review. I asked several members of the staff here who are not at all amateurs for their opinions. They agreed the book should be in our library, but no one considered it would be used frequently. "A back-up book, to confirm identifications for some of our visitors", one of them said.

But for us amateurs, in spite of its drawbacks, this book will be of much more use.

—LD

EDITOR'S NOTES

(Continued from Page 15)

freeze during the last week of December and the first week of January nipped many of the early - starters. It was followed by unusually hot weather from January 14th through the first week of February, over three weeks when the daily high was eleven to twenty degrees above normal! To make it worse, we had .22 inches of rain in January, while .73 inches is normal. The chances for any good display of desert wildflowers are about as low as they can be. However, if we have some good rains in February and early March, and if we have neither unseasonal heat nor winds, the chances will improve. Even if the rain is spotty, there will be spotty displays. Let's hope for rain.

Mexican Cactus

"AGAVE" CACTUS
Leuchtenbergia principis
Cactaceae

When is a cactus a cactus? This question comes to mind when you see this unusual monotypic plant that is unlike any other cactus. It does look something like a small agave (century plant) with its long "leaves" which are actually elongated tubercles, each tipped with a cluster of spines, growing directly out of the single or much-branched taproot.

This has been a collector's plant, so much so that areas in which we photographed the plants east of Huizache, San Luis Potosi, fifteen years ago, have been depleted almost completely, leaving only a few of the older plants which are too hard to remove. New growing areas are gradually being located, but the plant is not as plentiful in its natural state as it was twenty years ago in the states of San Luis Potosi, Guanajuato, Zacatecas and Coahuila.

It is an easy plant to grow from seedlings, and will flower when five or six years old. The large flowers, two and a half to three inches in diameter, are yellow and funnelform, and rise from the apex of the plant in the young areoles — at the tips of the "agave leaves". They will remain open for several days during cool weather.

Leuchtenbergia principis grows in either moist or very dry areas of slate, limestone, decomposed granite or in general humus. Its hardiness is rather spectacular, as it seems very well constructed to retain scant moisture in the driest parts of its habitat.

It is associated with other cacti, and when it is seen growing with **Agave lophantha** in the state of Coahuila, it resembles the agave much more than the other cacti around it.

The dry flower perianth persists on the long, dry, white fruit which contains dark brown seeds.

Type locality: Real del Monte.

Distribution: Central to northern Mexico.

References:

Britton & Rose, Cactaceae

—WHE

Arizona Wildflower

YELLOW FLAX
Linum puberulum

Flax Family
Linaceae

While the Blue Flax (see the November, 1970 Bulletin) grows to a height of two feet, its little yellow relative, **L. puberulum**, rarely reaches more than twelve inches in height, and is usually shorter than that.

This is a short-lived perennial, with pale green stems and leaves covered with dense short hair. The leaves are linear and less than a half-inch long. The flowers, which are about three-quarters of an inch across, are yellow, tinged with orange, and are darker toward the center. The five petals are prettily veined with copper or coral.

L. puberulum grows in the "Four-Corner States", Colorado, Utah, Arizona and New Mexico, at elevations ranging from 3500 ft. to 6500 ft. In Arizona it is found from Apache to eastern Mohave counties, and south to Cochise, Santa Cruz and Pima counties. It blooms from April to October.

It is common at Grand Canyon and at several National Mounments, such as Walnut Canyon near Flagstaff and Montezuma Castle in Yavapai County.

REFERENCES:
Kearney & Peebles, Arizona Flora
McDougall, Grand Canyon Wild Flowers

—LD

Yellow Flax is a short and delicate member of the Flax Family.

Shades of yellow, orange and copper are seen in this small flower.

"When them Arizona steers gets mad, pardner, you just better watch out!" (This picture was taken on one of our Field Trips — we don't always photograph desert flora.)

GARDEN ACTIVITIES

FEBRUARY

Tues.	2nd	CACTOMANIACS meeting	8:00 P.M.
Wed.	3rd	CLASSES—Cultivation of Trees & Shrubs	3 & 8 P.M.
Thurs.	4th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	6th	NATURE TRIP—Sierra Estrella Mtns. (30 miles)	8:30 A.M.
Tues.	9th	BONSAI SOCIETY—Panel Discussion	7:30 P.M.
Wed.	10th	CLASS (afternoon) FIELD TRIP—New River	8:30 A.M.
Thurs.	11th	LECTURE—Arizona Trees	3:00 P.M.
Sat.	13th	CLASS (evening) FIELD TRIP—New River	8:30 A.M.
Sat.	20th	ENTRIES DUE FOR CACTUS SHOW	5:00 P.M.
Sun.	21st	through Sun., 28th—24th ANNUAL CACTUS SHOW	dly. 9-5 P.M.
Tues.	23rd	BONSAI SOCIETY Workshop—Non-needle Tree Demonstration	7:30 P.M.

MARCH

Tues.	2nd	CACTOMANIACS meeting	8:00 P.M.
Thurs.	4th	LECTURE—Arizona Birds	3:00 P.M.
Sat.	6th	NATURE TRIP—First Water Ranch (40 miles)	8:30 A.M.
Tues.	9th	BONSAI SOCIETY—Fertilizers & Insecticides	7:30 P.M.
Wed.	10th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs.	11th	LECTURE—Arizona Scenics	3:00 P.M.
Wed.	17th	CLASSES—Succulent Plants	3 & 8 P.M.
Thurs.	18th	LECTURE—Collecting in Mexico	3:00 P.M.
Tues.	23rd	BONSAI SOCIETY Workshop—Rock Planting Demonstration	7:30 P.M.
Wed.	24th	CLASSES—Culture of Succulent Plants	3 & 8 P.M.
Thurs.	25th	LECTURE—Arizona Cacti	3:00 P.M.
Wed.	31st	CLASSES—Desert Trees and Shrubs	3 & 8 P.M.

SAGUARO LAND BULLETIN

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SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor

LILLIAN DIVEN, Associate Editor

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Table of Contents

Report of the 23rd Annual Cactus Show.....27
Arizona Shrub-Desert Bedstraw *(Galium stellatum)*.....35
Garden Activities 35

ALL CACTUS SHOW PHOTOS BY FRED BASELT

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

REPORT OF THE 24th ANNUAL CACTUS SHOW

The 24th Annual Cactus Show held the last week of February was indeed a delight to admire. The specimen plants were in good shape and despite the January freeze there were ample leaf succulent plants on display. Believe that many exhibitors did protect their plants for the Show.

There was a large entry of excellent dish gardens. Centerpieces were few. Arrangements against the wall were quite good. The dry arrangements in the various classifications caused many comments by the many visitors as to "What is the dried material?"

The Junior division always attracts many entries and comments by the younger ones who indicated they were happy with the results.

The Paintings, Watercolors and other media always add color to the Show. The educational entries were the best to date. The dried cacti and desert flowers by Mrs. J. Alsever were eye-catchers. The pen drawings of Arizona cacti by Miss Ethel Twitchell were technical and attractive. Some of the button gardens were so diminutive that amazed visitors looked at them with a magnifying glass.

The displays by John Hales answered many questions for the visitors. The display of the "Reina de la Noche" (Arizona Queen of the Night) from the germinating seeds to a complete plant (tuber and stems) was an "I don't believe it" exhibit that will be used in the Auditorium the rest of the year. They will also be exhibited at the 6th Annual Show of the Cactus & Succulent Society of America at the Los Angeles State & County Arboretum at Arcadia, Calif. in July 1971.

All in all, it was another fine Show and the judges — Whit Evans (Cactus and Leaf succulents), Mrs. G. G. Williams, Mrs. S. R. Stevens and Miss Betty Schimek (Arrangements), Mrs. Martha Glasco (Arts) and Darwin Van Campen (Photography) are to be commended for jobs well done. We again extend our thanks to them.

Attendance this year was under last year's peak due to unfavorable weather, yet it gave visitors a better chance to see the Garden and Show without the feeling of "being pushed past" the exhibits so they could easily scrutinize the plants on display.

Financial returns were again excellent. Profits will be used for improvements and added items needed for the Garden.

Many intriquing youth visit the Show each year. Use your own caption to interpret the following interesting photos.

The Show, again co-sponsored by the Phoenix Gazette had good coverage in its paper also by the Arizona Republic and other papers in the valley. Radio and T.V. coverage made the people of the valley aware of the Desert Botanical Garden. Many new memberships were obtained during the Show. Incidentally, members are much surprised to learn that we now have nearly 1400 memberships.

Photos of the Show in this issue were taken by Fred Baselt, who, with his wife Wilma, gave four days of their time to the Show.

Exhibitors who entered their exhibits and also gave of their time so that the visitors could enjoy the Show were: Mrs. F. M. Feffer, Mrs. Ruth Garland, John B. Hales, Mr. and Mrs. Arthur Holt, Miss Dorothy O'Rourke, Mr. and Mrs. Henry Ronowski, Dr. and Mrs. E. H. Schrieber, Mr. and Mrs. Joe Settle, Mrs. R. I. Turner.

Exhibitors who displayed their entries were: Mrs. John Alsever, Mrs. Carol E. Amy, Barbara Baker, Mrs. Pat Baker, Kenneth C. Balcomb, Mrs. Dorothy Battiest, David Bauer, Greg Beroza, Mr. and Mrs. John Biddle, Mr. and Mrs. Alan Blackburn, Robert H. Bloedel, Mrs. Ruth Blomeyer, Rose Bosack, L. Bremer, Mrs. Jo Ann Budziszewski, Katie Burgin, Mrs. Claude Burt, Mrs. Ted Chambers, Mr. and Mrs. William Clark, Heidi Dunn, Miss Genevieve Evans, Jacqueline L. Evans, Lesley G. Evans, Wayne Fernyhough, Mrs. Sarah B. Foster, Wayne C. Foster, Mr. and Mrs. Otto Friedrichs, Charles Garland, Peter C. Gulatto, Mrs. Thelma J. Hansel, Miss Agnes M. Holst, William Hookway, Mrs. Verjean Houck, Jo Houdek, Mrs. Ruby B. Jennings, Charles June, Mrs. Pat Kelly, Mrs. Joan Kerr, Todd Kerr, Mrs. Adena Leth, Lillian A. Lugibihl, Terry Mahoney, Bill Manderfield, Mr. and Mrs. John Matthes, Norma McDermitt, Charles F. Merbs, Miss Shannath Merbs, Charles E. Mieg, Miss Joy E. Mitchell, Bob Moulis, Mike Mulder, Dean Mumford, Duane Mumford, Timmy Nance, Mrs. Mary Nelson, Mark Nelson, Pat Nelson, Mrs. Valerie Nelson, Mrs. Laura Nixon, Ruth Noland, Mrs. Rena Norviel, Ann O'Neill, Mrs. Emma Oscarson, Michael B. Palmer, Jimmy Penberthy Jr., Louis Polichino, Dick Raymond, James A. Robbins, John David Robbins, Mrs. Bonnie L. Rodriguez, Mrs. Adrienne Roscoe, Helen B. Sands, Miss Kathryn Scott, Stanley Z. Scott, Sr., Dorothy Seideman, Mrs. Russell Slingerland, Mrs. E. E. Smith, George Smith, Mrs. Judy Smith, Dr. L. D. Sprague, Biven Stewart, David Strader, Johnny Strader, Isabelle Strandberg, Beth Swanson, Miss Ethel Twitchell, Eva Vichules, John H. Walter, Al Wilson, Mrs. Linda Lee Umphrey.

Members of the Garden who volunteered from ½ day to several days were: Mr. and Mrs. Fred Baselt, Mr. and Mrs. Cliff Brown, Mrs. Roy Cooper, John Earle, Mrs. A. H. Ely, Mrs. Florentine Gebert, R. J. Gotter, Mr. and Mrs. Carl Groschke, Mr. and Mrs. Frank Hennessey, Mrs. Mildred Hunt, Meta Jadamowitz, Mr. and Mrs. E. Johnson, Bernice Knight, Mr. and Mrs. Salvatore Macri, Mr. and Mrs. J. C. McDougall, Ann McGill, Miss Helen Mitchell, Mrs. Jerry Nelson, Mr. and Mrs. A. P. Neumann, Mr. and Mrs. Ransom, Mrs. Esther Rasnick, Mrs. Dorothy Reiff, Mr. and Mrs. Walter L. Schneider, Mrs. Clifford M. Schroeder, Miss Helen Seder, Dave Squire, Don Squire, Mrs. F. C. Stiles, Mr. and Mrs. Leslie Taylor, Neil T. Van Ness, Demetrios Vlachos, Mr. O. D. Wellborn, Mrs. Jackis Wilson, Dr. and Mrs. L. S. Meyer.

Of interest to all the volunteers were the delicious hot meals served to them at noon and supervised by Thelma McDougall and cooked by her and her able assistants, Mrs. A. P. Neumann, Mrs. E. H. Schrieber, and Mrs. R. I. Turner.

An interesting source of revenue to the Garden during the Show is the sale of plants contributed to the Garden by the following members: Mrs. Nola Belford, Mrs. R. C. Cooper, Mrs. Hubert Earle, John Hales, Miss Agnes Holst, Mrs. Carl Lockman, Mr. C. C. Pidgeon, Mrs. George Probert, Mrs. L. Simms, Laura Nixon.

SWEEPSTAKES AWARDS

CACTI: Alan Blackburn, Tucson
LEAF SUCCULENTS: James Robbins, Tucson
ARRANGEMENTS: Mrs. Ted Chambers, Apache Junction
ARTS: Agnes Holst, Phoenix

TROPHY WINNERS

BEST CACTUS: Charles Mieg, Scottsdale
MAMMILLARIA: Alan Blackburn, Tucson
CRESTED CACTUS: Mrs. Emma Oscarson, Phoenix
COLLECTION OF 5 CACTI: Bob Moulis, Phoenix
BEST LEAF SUCCULENT: Mrs. Russell Slingerland, Phoenix
DISH GARDEN: Mrs. Emma Oscarson, Phoenix
CENTERPIECE: Valerie J. Nelson, Scottsdale
ARRANGEMENT AGAINST THE WALL: Mrs. Ted Chambers, Apache Junction
BUTTON ARRANGEMENT: Valerie J. Nelson
PATIO PLANTER: Mrs. F. M. Feffer, Scottsdale
EDUCATIONAL: Mrs. John Alsever, Phoenix
DESERT WOODS: Mrs. Pat Kelly, Phoenix
BLACK AND WHITE PHOTO: Michael B. Palmer, Prescott
TRANSPARENCY: Agnes M. Holst, Phoenix
OIL PAINTING: Mrs. Adrienne Roscoe, Apache Junction
WATERCOLOR: Mrs. Ruth Blomeyer, Scottsdale
ANY OTHER ART MEDIUM: Rena Norviel, Phoenix
JUNIOR ENTRY: Pat Nelson, Scottsdale
CORSAGE: Mrs. Ted Chambers, Apache Junction

RIBBON AWARD WINNERS

SECTION 1, CACTI. CLASS A, POTTED PLANTS

1. OPUNTIA. 1st, Emma Oscarson. 2nd, Chas. E. Mieg, 3rd, Mrs. Russell Slingerland.
2. CEREUS. 1st, 2nd, and 3rd, Alan Blackburn, 4th, Bob Moulis.
3. ECHINOCEREUS. 1st and 3rd, Alan Blackburn. 2nd. Chas E. Mieg. 4th, John Hales.
4. REBUTIA. 1st and 2nd. Alan Blackburn. 3rd and 4th, Betty Blackburn.

5. CHAMAECEREUS. 1st, Alan Blackburn. 2nd, Biven Stewart.
6. LOBIVIA. 1st and 2nd, Betty Blackburn. 3rd and 4th, Alan Blackburn.
7. ECHINOPSIS. 1st, J. B. Hales, 2nd, Laura Nixon, 3rd and 4th, Alan Blackburn.
8. ARIOCARPUS. 1st and 4th, Alan Blackburn. 2nd, L. Bremer. 3rd, Chas. E. Mieg.
9. STENOCACTUS. 1st and 4th, L. Bremer, 2nd, John Hales. 3rd, Alan Blackburn.
10. FEROCACTUS. 1st, 2nd, and 3rd, Chas. E. Mieg, 4th, L. Bremer.
11. ECHINOCACTUS. 1st, John David Robbins. 2nd and 3rd, L. Bremer. 4th, Chas. E. Mieg.
12. GYMNOCALYCIUM. 1st, John Hales. 2nd, 3rd, Alan Blackburn. 4th, Betty Blackburn.
13. ASTROPHYTUM. 1st, Chas. E. Mieg. 2nd, Bob Moulis, 3rd, L. Bremer. 4th, Alan Blackburn.
14. THELOCACTUS. 1st, 3rd, and 4th, L. Bremer. 2nd, Alan Blackburn.
15. ECHINOMASTUS. 1st, 2nd, and 4th, L. Bremer. 3rd, A. Blackburn.
16. CORYPHANTHA. 1st, Bob Moulis. 2nd, L. Bremer. 3rd, J. B. Hales. 4th, Alan Blackburn.
17. MAMMILLARIA. 1st, Alan Blackburn. 2nd, Mrs. R. Slingerland. 3rd, Alan Blackburn. 4th, Bob Moulis.
18. NOTOCACTUS. 1st, Emma Oscarson. 2nd and 3rd, Blan Blackburn. 4th, Chas. E. Mieg.
19. NEOPORTERIA. 1st and 2nd, Chas E. Mieg.
20. PARODIA. 1st, 3rd, and 4th, Alan Blackburn. 2nd, Betty Blackburn.
21. SEEDLINGS. 1st, Mrs. Mary Settle. 2nd and 3rd, Chas E. Mieg, 4th, Mrs. R. Slingerland.
22. ANY OTHER SPECIES. 1st and 3rd, Alan Blackburn. 2nd, Emma Oscarson. 4th, Eva Vichules.
23. TURBINOCARPUS. 1st and 3rd, Bob Moulis. 2nd, Chas. E. Mieg, 4th, L. Bremer.
24. PEDIOCACTUS. 1st, 3rd, and 4th, Betty Blackburn. 2nd, Bob Moulis.
25. CLEISTOCACTUS. 1st, Charles Merbs. 2nd, 3rd, and 4th, Alan Blackburn.
26. STROMBOCACTUS. 1st, John Hales.
27. OBREGONIA. 1st, Bob Moulis.
28. FRAILEA. 1st, John David Robbins.
29. MATUCANA. 1st, John David Robbins.
30. ANCISTROCACTUS. 1st, Alan Blackburn.

SECTION I, CACTI. CLASS B. CRESTED

1. CRESTED — OWN ROOT. 1st, Emma Oscarson. 2nd and 3rd, L. Bremer. 4th, Betty Blackburn.
2. CRESTED — GRAFTED. 1st, John Hales, 2nd, 3rd, and 4th, Bob Moulis.

CLASS C. MONSTROSE

1st, Alan Blackburn. 2nd, Mrs. Adena Leth. 3rd, John Hales. 4th, Louis Polichino.

CLASS D. GRAFTED

1st, Betty Blackburn. 2nd, Bob Moulis. 3rd, Bob Moulis. 4th, Alan Blackburn.

CLASS E. COLLECTIONS

1st, Bob Moulis. 2nd, Betty Blackburn. 3rd, Alan Blackburn.

SECTION II. SUCCULENTS OTHER THAN CACTI. CLASS A. POTTED.

1. AEONIUM. 1st, Eva Vichules. 2nd, Alan Blackburn. 3rd, Eva Vichules. 4th, Mrs. R. I. Turner.
2. AGAVE. 1st, Bob Moulis. 2nd, John Hales. 3rd and 4th, Emma Oscarson.
3. ALOE. 1st, James A. Robbins. 2nd and 4th, Mrs. Russell Slingerland. 3rd, John Hales.
4. BRYOPHYLLUM. (None)
5. CRASSULA. 1st, Eva Vichules. 2nd, Mrs. R. I. Turner.
6. DUDLEYA. 1st, Stanley Scott. 2nd and 3rd, Isabelle Holt.
7. ECHEVERIA. 1st and 2nd, John Hales. 3rd, Alan Blackburn.
8. EUPHORBIA. 1st, Alan Blackburn, 2nd, Emma Oscarson. 3rd, Mrs. R. I. Turner, 4th, Mrs. John Biddle.
9. GASTERIA. 1st. James A. Robbins, 2nd, 3rd, and 4th, John Hales.
10. HAWORTHIA. 1st, Isabelle Strandberg, 2nd and 4th, James A. Robbins, 3rd, Mrs. Russell Slingerland.
11. KALANCHOE. 1st, Alan Blackburn. 2nd, Mrs. Russell Slingerland.
12. LITHOPS. 1st, 2nd, 3rd, James D. Robbins. 4th, John D. Robbins.
13. MESEMBRYANTHEMUM. 1st. 2nd, and 3rd, James A. Robbins.
14. PLEIOSPILOS. 1st, 2nd, 3rd, James A. Robbins.
15. SEDUM. 1st and 2nd, Mrs. Russell Slingerland. 3rd, John Hales.
16. STAPELIA. 1st, Isabelle Strandberg.
17. YUCCA. 1st, Isabelle Strandberg.
18. BROMELIADS. 1st, Mrs. Russell Slingerland.
19. SEEDLINGS. 1st, and 2nd, Chas. Merbs. 3rd, Chas E. Mieg.
20. ANY OTHER SPECIES. 1st, J. B. Hales. 2nd, Bob Moulis. 3rd and 4th, James A. Robbins.
21. HOYAS. 1st and 3rd, Mrs. Russell Slingerland. 2nd, J. B. Hales. 4th, Isabelle Strandberg.
22. ANACAMPSEROS. 1st, 2nd, and 3rd, James A. Robbins.
23. OPHTHALMOPHYLLUM. 1st, 2nd, and 3rd, James A. Robbins.
24. DINTHERANTHUS. 1st, 2nd, and 3rd, James A. Robbins.
25. FAUCARIA. 1st, James A. Robbins.
26. GIBBAEUM. 1st, James A. Robbins.
27. CONOPHYTUM. 1st, 2nd, and 3rd, James A. Robbins.

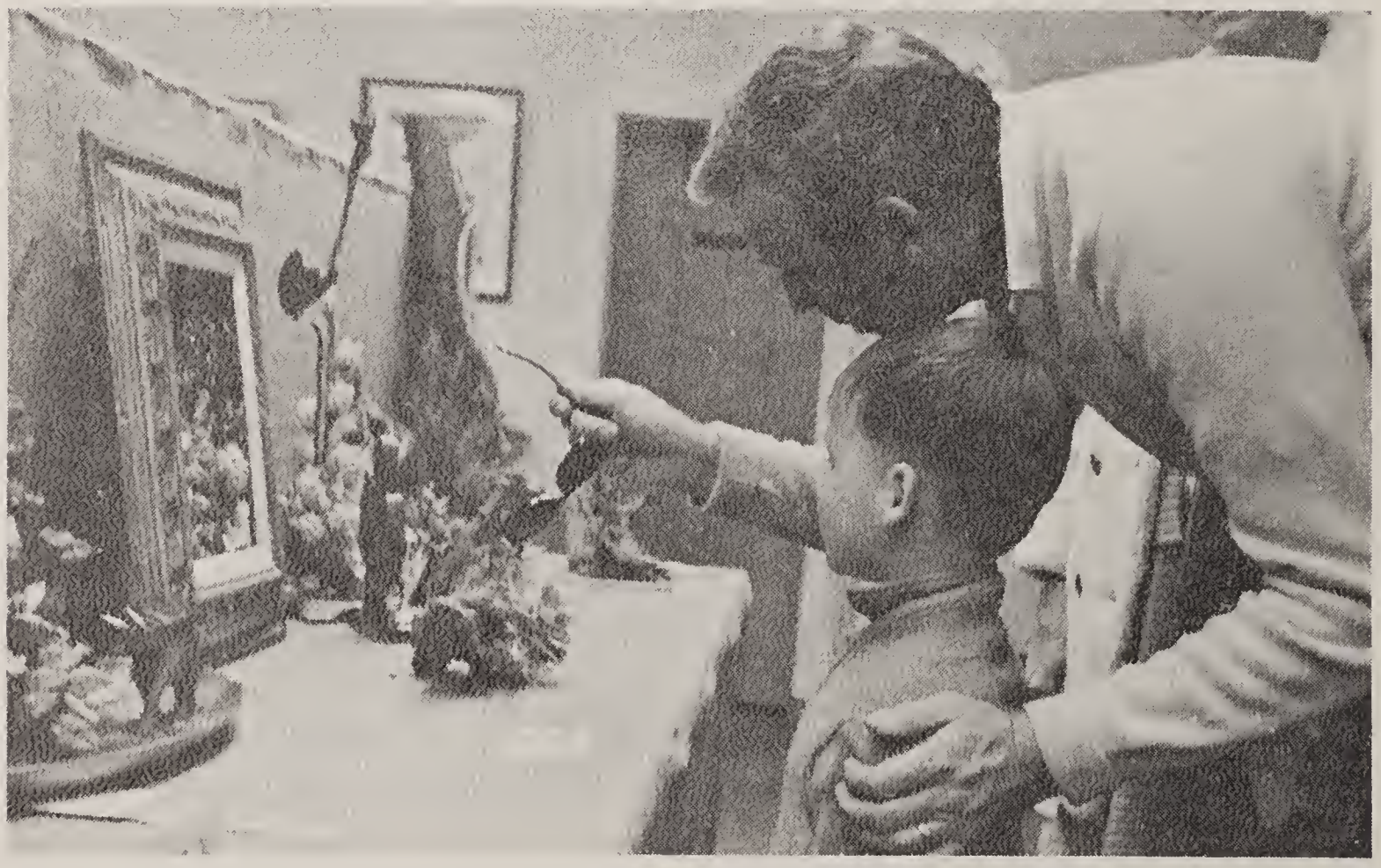
SECTION II. CLASS B. COLLECTIONS.
1st, James A. Robbins. 2nd. John Hales.

SECTION III. Desert TREES AND SHRUBS.
CLASS A. TREES. 1st, Stanley Scott. 2nd, and 3rd, John Hales.
CLASS B. SHRUBS. 1st, John Hales.
CLASS C. DESERT BONSAI (None)
CLASS D. SEEDLINGS. 1st, Chas. E. Mieg. 2nd, Chas. E. Mieg.
CLASS E. ANY OTHER DESERT PLANTS. (None)
CLASS J. HANGING BASKETS. 1st, Mrs. Frank Feffer.
CLASS K. STRAWBERRY JARS. 1st, Mrs. Russell Slingerland
CLASS L. PATIO PLANTERS. 1st, Mrs. F. M. Feffer. 2nd, John Hales. 3rd, Biven Stewart. 4th, Mary Nelson.

SECTION IV. CLASS A. DISH GARDENS.
1. CACTI. 1st, Emma Oscarson. 2nd, Mrs. Lillian Lugibihl. 3rd, Miss Joy E. Mitchell. 4th, Ann O'Neill.
2. OTHER SUCCULENTS. 1st, Mrs. Adena Leth. 2nd, Emma Oscarson. 3rd, Isabelle Holt. 4th, Valerie J. Nelson.
3. CACTI AND OTHER SUCCULENTS. 1st, Emma Oscarson. 2nd, Jacqueline Evans. 3rd, Isabelle Holt. 4th, Valerie J. Nelson.

CLASS B. TERRARIUM. 1st, Mrs. Russell Slingerland. 2nd, Norma McDermitt, 3rd, Ann O'Neill.

CLASS C. CENTERPIECES.
1. CACTI. 1st, Valerie J. Nelson. 2nd, Mrs. R. I. Turner. 3rd, Dottie Battiest.
2. OTHER SUCCULENTS. 2nd, Mrs. R. I. Turner, 3rd, Isabelle Holt.
3. CACTI AND OTHER SUCCULENTS. 1st, Alan Blackburn. 2nd, Mrs. R. I. Turner. 3rd, Betty Blackburn.



4. NATURAL, DRIED DESERT MATERIAL. 1st, Valerie J. Nelson. 3rd, Mrs. Pat Kelly.
5. MEXICAN THEME. 3rd, Mrs. R. I. Turner.
6. AMERICAN INDIAN THEME. 1st, Mrs. E. H. Schrieber.
7. ANY OTHER. 3rd, Mrs. E. H. Schrieber.

CLASS D. ARRANGEMENTS ON OR AGAINST THE WALL.

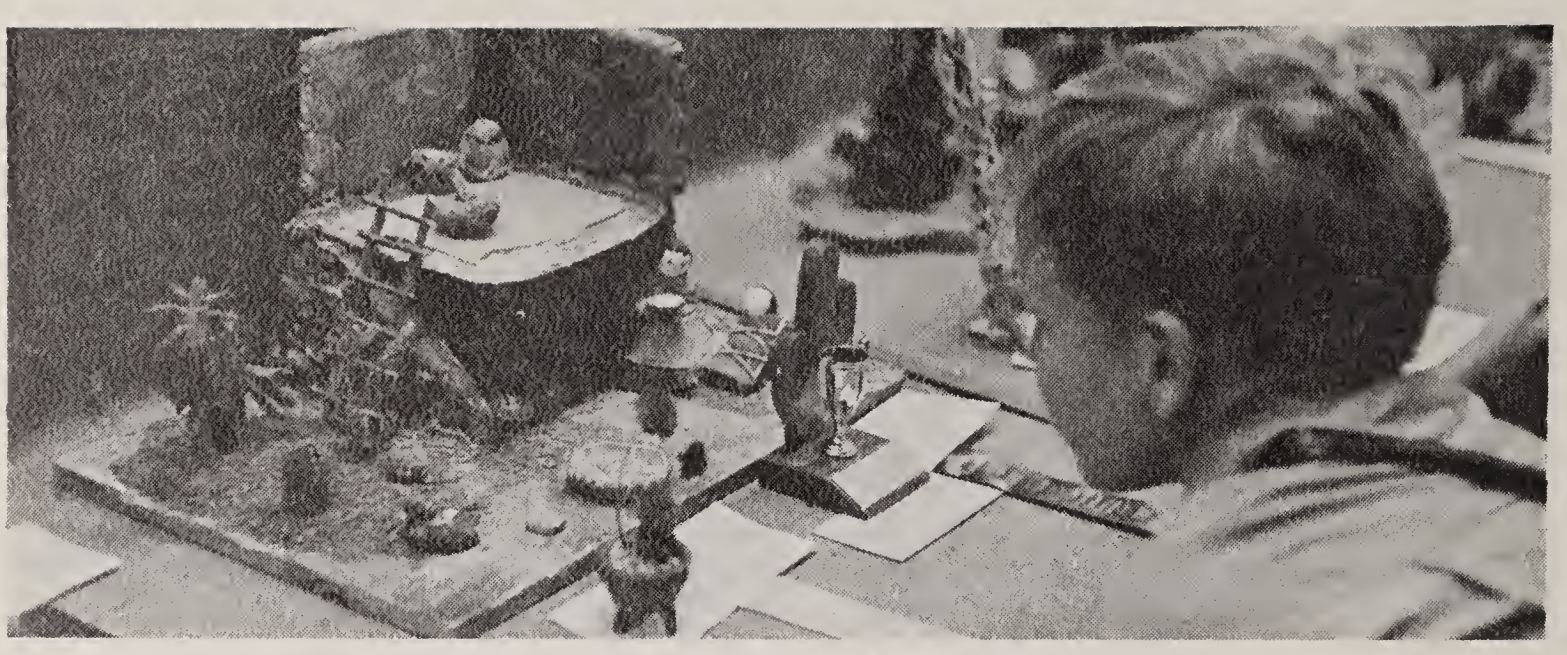
1. CACTI. 1st, Mrs. John Alsever. 2nd, Mrs. R. I. Turner. 3rd, Valerie J. Nelson. 4th, A. Verjean Houck.
2. OTHER SUCCULENTS. 2nd, Mrs. R. I. Turner. 3rd, Valerie J. Nelson.
3. CACTI & OTHER SUCCULENTS. 1st, Mrs. Claude Burt. 2nd, Dottie Battiest. 3rd, Mrs. R. I. Turner.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Mrs. Adena Leth. 3rd, Laura Nixon. 4th, Valerie J. Nelson.
5. MEXICAN THEME. 2nd, Mary Nelson. 3rd, Mrs. Ted Chambers.
6. AMERICAN INDIAN THEME. 1st, Valerie J. Nelson. 2nd, Mrs. Ted Chambers.
7. ANY OTHER. 1st, Mrs. Ted Chambers. 2nd, Valerie J. Nelson. 3rd, Isabelle Strandberg. 4th, Mrs. Adena Leth.

CLASS E. CORSAGES.

1. CACTI. (None)
2. OTHER SUCCULENTS. 1st, Mrs. Ted Chamber. 3rd, Dottie Battiest.
3. CACTI & OTHER SUCCULENTS. (None)
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Isabelle Strandberg. 3rd, Mrs. E. H. Schrieber.
5. MEXICAN THEME (None)
6. AMERICAN INDIAN THEME. (None)
7. ANY OTHER. 1st, Mrs. Ted Chambers.

SECTION IV. CLASS F. BUTTON.

1. CACTI. 1st, Valerie J. Nelson. 2nd, Bonnie Rodriguez. 3rd, Mrs. Adena Leth.
2. OTHER SUCCULENTS. 1st, Valerie J. Nelson. 3rd, Mrs. Claude Burt.
3. CACTI & OTHER SUCCULENTS. 3rd, Mrs. Ted Chambers.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Valerie J. Nelson, 3rd, Mary Nelson. 4th, Katie Burgin.
5. MEXICAN THEME. 1st, Valerie J. Nelson. 2nd, Mary Nelson. 3rd, Bonnie L. Rodriguez.
6. AMERICAN INDIAN THEME. 1st, Mrs. Ted Chambers. 2nd, Valerie J. Nelson. 3rd, Bonnie L. Rodriguez.



7. ANY OTHER. 1st, Mrs. Ted Chambers. 2nd, Mary Nelson.

SECTION IV. CLASS G. MINIATURE ARRANGEMENTS (Under 5" high)

1. CACTI. 1st, Mrs. John Alsever. 2nd, Mrs. Ted Chambers.
2. OTHER SUCCULENTS. (None)
3. CACTI AND OTHER SUCCULENTS. (None)
4. NATURAL, DRIED DESERT MATERIAL. 1st, Valerie J. Nelson. 2nd, Mrs. Ted Chambers. 3rd, Mary Nelson.
5. MEXICAN THEME. 2nd, Valerie J. Nelson.
6. AMERICAN INDIAN THEME. NONE (No award "over 5")
7. ANY OTHER. 1st, Mrs. E. H. Schrieber. 2nd, Mrs. Ted Chambers. 3rd, Mrs. John Alsever.

SECTION IV. CLASS H. SMALL ARRANGEMENTS.

1. CACTI. 1st, Mrs. Ted Chambers.
2. OTHER SUCCULENTS. (None)
3. CACTI & OTHER SUCCULENTS. (None)
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Kathryn Scott. 3rd, Valerie J. Nelson. 4th, Mrs. John Alsever.
5. MEXICAN THEME. 1st, Valerie J. Nelson. 3rd, Mrs. E. H. Schrieber.
6. AMERICAN INDIAN THEME (None)
7. ANY OTHER. 1st, Mrs. Ted Chambers. 3rd, Mrs. John Alsever.

—Concluded in the April issue

DESERT BEDSTRAW
Galium stellatum Kellogg

Rubiaceae
Madder Family

Galium stellatum is a perennial shrub that has woody stems extending 15 to 60 cm. (0.5 to 2 ft.) above ground, quite unlike other Arizona bedstraws. It is intricately branched and the young branches are strongly angled. The herbage is rough with short simple hairs. The bark of the old stems is pale-gray to white and exfoliates, peeling off in thin layers. Leaves are pale-green, rigidly divergent, and arranged in whorls of four. They are elliptic to lanceolate or ovate in shape and 5 to 15 mm. in length. The leaf apex is acute or acuminate and is often tipped with a short sharp point. There is one prominent midvein, the lateral ones are obscure. The leaves are bristly with short, simple, stiff hairs. Flowering occurs from January through May. The flowers are unisexual and occur in many flowered compact panicles or in diffuse panicles. Externally pubescent, the corolla is greenish-white or greenish-yellow in color. It is 2.5 to 3.5 mm. in diameter with ovate lobes that are broadly acute at the apex. The fruit is very small, 2.5 to 3 mm. wide, and is not fleshy, but dry at maturity. It is noticeably and densely hispid with soft, straight, white hairs. Seed has a concave face.

Desert bedstraw has an extensive distribution in southwestern United States and northwestern Mexico. It is limited to the lower sonoran zone at elevations of 3,000 ft. (914 meters) and below in southern Utah, southern Nevada, Arizona, southern California and in Baja California and Sonora, Mexico. In Arizona it is common on dry rocky mesas and hillsides in Mohave, Yavapai, Maricopa, Pima and Yuma counties and also in the Grand Canyon in Coconino county.

Galium stellatum is a shrub that would seldom receive consideration as an ornamental species. In flower or fruit, however, it bursts forth from insignificance to be readily discernable amid other hillside vegetation. The flowers are very small, but occur in such profusion as to create the illusion of a snow-flecked bush. It is very drought hardy and is capable of withstanding high daily temperatures. While this plant has not been in cultivation at the Desert Botanical Garden and no attempt has been made to grow it from seed, it should transplant successfully if the crown is reduced. Seed pretreatment is probably not needed for germination.

REFERENCES:

Kearney & Peebles, Arizona Flora.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.
Standley, Paul C., Trees and Shrubs of Mexico.

One-eighth inch wide blossoms of *Galium stellatum*

One-eighth inch wide fruit of *Galium stellatum*

GARDEN ACTIVITIES

MARCH

Tues.	2nd	CACTOMANIACS meeting	8:00 P.M.
Thurs.	4th	LECTURE—Arizona Birds	3:00 P.M.
Sat.	6th	NATURE TRIP—First Water Ranch (40 miles)	8:30 A.M.
Tues.	9th	BONSAI SOCIETY—Fertilizers & Insecticides	7:30 P.M.
Wed.	10th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs.	11th	LECTURE—Arizona Scenics	3:00 P.M.
Wed.	17th	CLASSES—Succulent Plants	3 & 8 P.M.
Thurs.	18th	LECTURE—Collecting in Mexico	3:00 P.M.
Tues.	23rd	BONSAI SOCIETY Workshop—Rock Planting Demonstration	7:30 P.M.
Wed.	24th	CLASSES—Culture of Succulent Plants	3 & 8 P.M.
Thurs.	25th	LECTURE—Arizona Cacti	3:00 P.M.
Wed.	31st	CLASSES—Desert Trees and Shrubs	3 & 8 P.M.

APRIL

Thurs.	1st	LECTURE—Arizona Wildflowers	3:00 P.M.
Tues.	6th	CACTOMANIACS meeting	8:00 P.M.
Wed.	7th	CLASSES—Cultivation of Trees and Shrubs	3 & 8 P.M.
Thurs.	8th	LECTURE—Arizona Trees	3:00 P.M.
Sat.	10th	NATURE TRIP—Top-of-the-World (65 miles)	8:30 A.M.
Mon.	12th	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	13th	BONSAI SOCIETY—Pre-show Meeting and Slide Show	7:30 P.M.
Wed.	14th	CLASS (afternoon) FIELD TRIP—Brushy Basin	8:30 A.M.
Thurs.	15th	LECTURE—Arizona Birds	3:00 P.M.
Sat.	17th	CLASS (evening) FIELD TRIP—Brushy Basin	8:30 A.M.
Sat-Sun.	17-18th	BONSAI SOCIETY SPRING SHOW	9-5 P.M.
Mon.	19th	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Thurs.	22nd	LECTURE—Arizona Scenics	3:00 P.M.
Tues.	27th	BONSAI SOCIETY Workshop—Summer Care of Bonsai	7:30 P.M.
Thurs.	29th	LECTURE—Collecting in Mexico	3:00 P.M.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXV April, 1971 No. 4

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXV | April, 1971 | No. 4

Arizona Cactus and Native Flora Society

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Table of Contents

Editor's Notes 39
Photos of Arrangements in the 24th Cactus Show 40
Aspects of the Desert — Ocotillo 43
Desert trees & Shrubs — *Abutilon californicum* 44
Arizona Cactus — *Echinocereus mojavensis* 46
Mexican Cactus — *Mammillaria compressa* 47
Garden Activities — April & May 48

Cover photo — Desert Shrubs and Leaf-Succulents exhibited in the Patio

Photos by W. H. Earle

Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

Last month's Saguaroland Bulletin carried photos of children viewing the exhibits. We have had many requests to publish "What are the children looking at?" So we are devoting several pages of this issue to some of the exhibits.

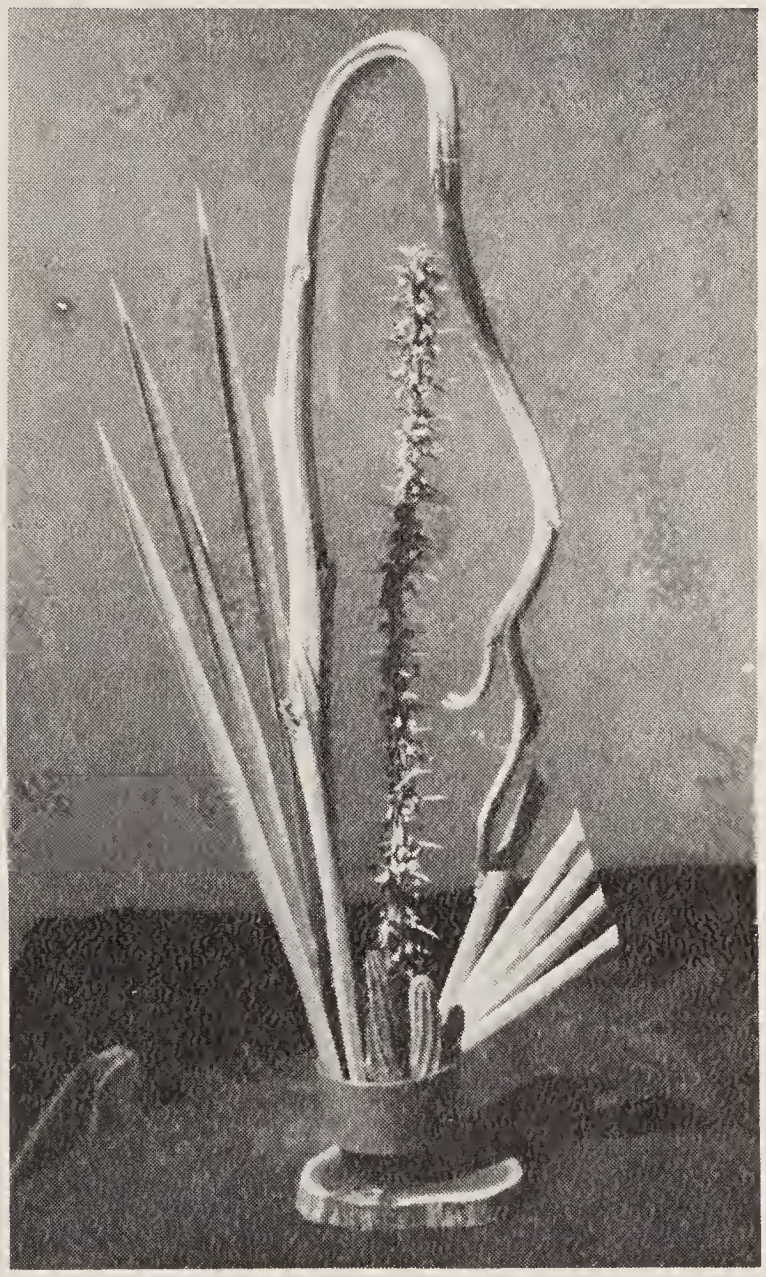
March was a very busy month in attempting to get 'settled' after our fine 1971 Show last February. John Weber and Lynn Trainum spent a week staging the Show and then another week in taking down and storing it away for another year.

The wonderful Educational displays were begun last December by John Hales and John Weber. These attracted much attention, so much so, that cactus show chairmen want them exhibited at El Paso in May and Arcadia, Calif. in July.

Joy Lee Schroeder did the art work on the displays and kept busy for about three weeks making cards for the Show and the Bookstore. I really appreciate the work of our Staff members and the Volunteers.

We are now clearing up last January's freeze damage done to the plants in the garden. It is rather discouraging to grow the plants for many years up to specimen size and then have 'burnt' in one night by a heavy freeze.

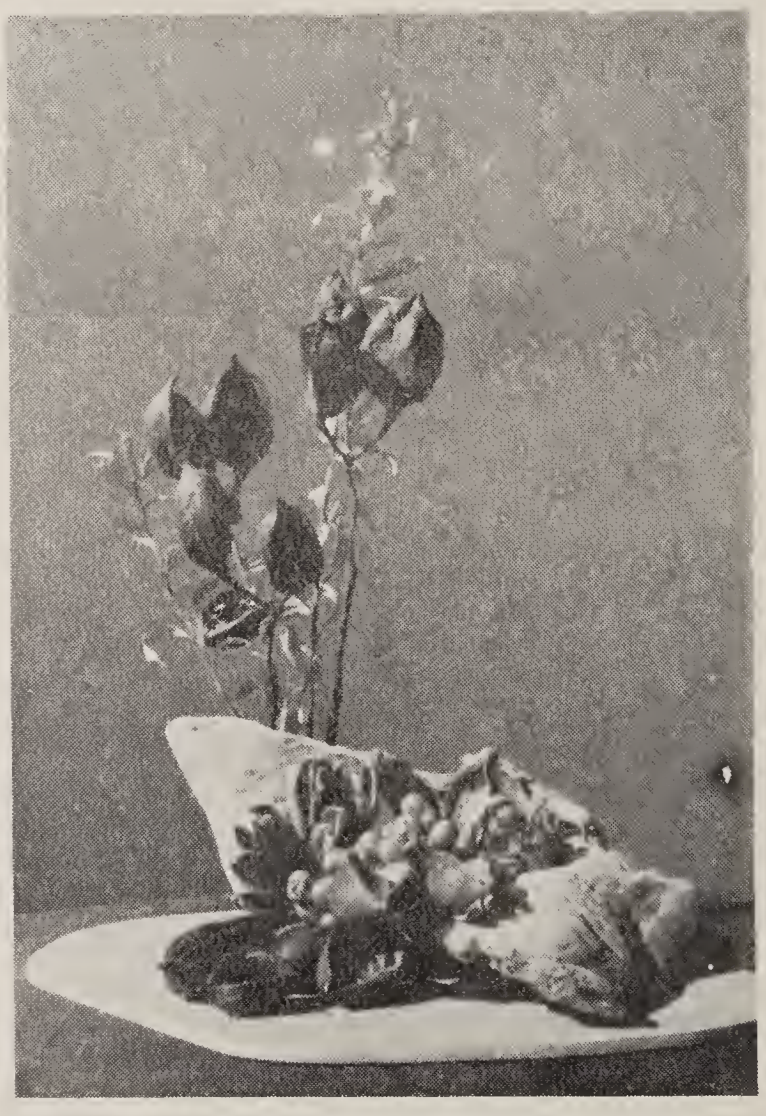
Enclosed with this issue is your Ballot for the election of three Board Members for 1971-72 mentioned on the Ballot. Additional lines and boxes are provided for your "write-ins".



Centerpiece by Mrs. Claude Burt of Yucca and palm leaves, Ocotillo, Peanut cactus and an abnormal Century plant's flowering stem.

Best Leaf-succulent, *Aechmea fasciata*, exhibited by Mrs. Russel Slingerland.

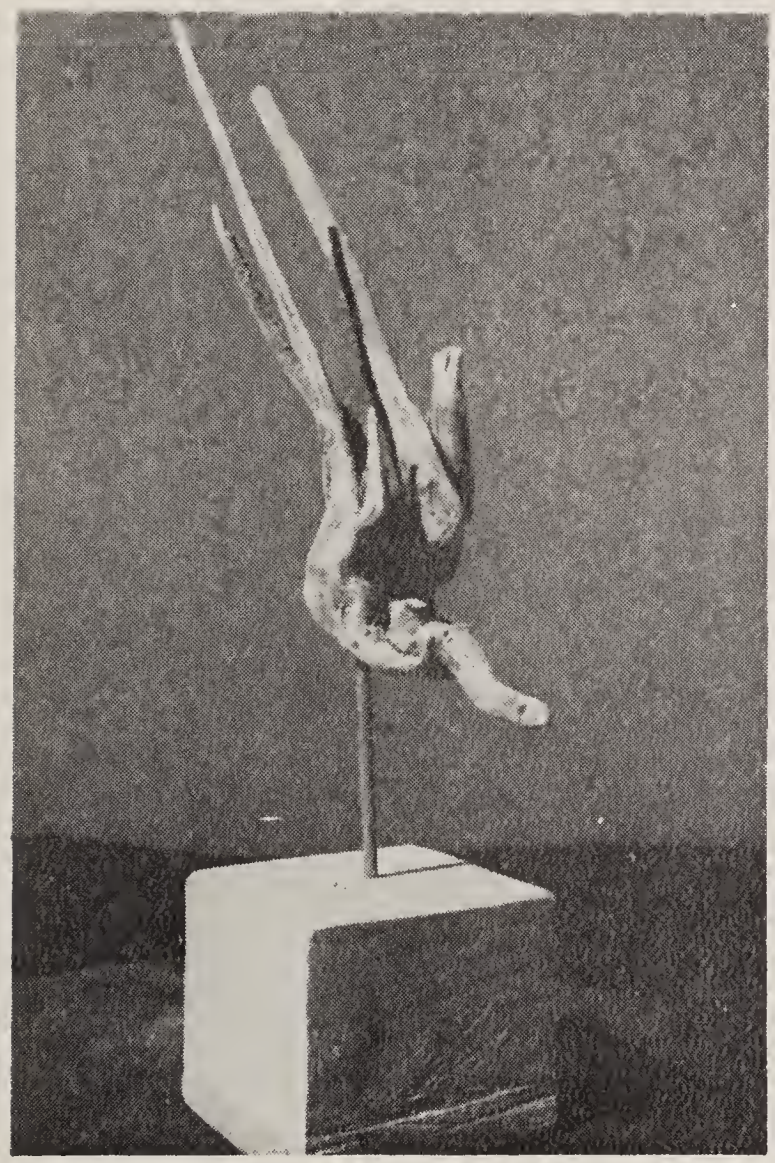
Potted *Aloe variegata* shown by Mary Nelson.



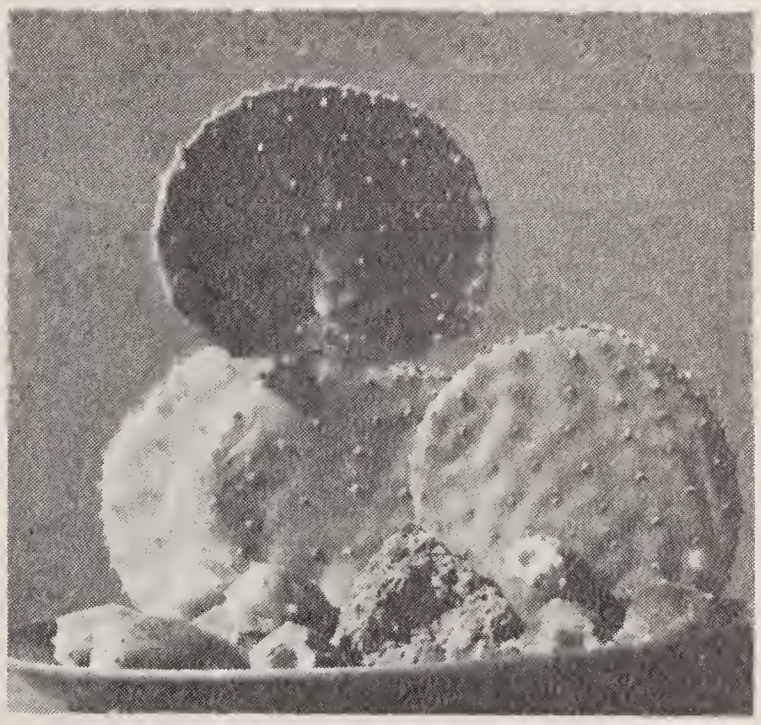
Dry arrangement by Mrs. E. H. Schrieber of Bottle-tree fruit pods and berries of pyracantha.

Purple leaf, *Aeonium arboreum var. atropurpureum* by Eva Vichules.

Dried desert flowers by Mrs. Valerie Nelson.



Desert Wood — 'Bird in Flight' by Mrs. Pat Kelley.



Centerpiece of Purple-prickly pear, *Opuntia santa-rita,* by Mrs. Lela Turner.

Desert Wood exhibited by Mrs. Emma Oscarson.

Dry Arrangement against the wall by Mrs. Verjean Houck made of a Saguaro boot for a base, desert shrubs and inner-fibrous sheets of an Opuntia pad.

Pediocactus simpsonii, a robust plant in flower grown and exhibited by Alan Blackburn.

ASPECTS OF THE DESERT

The OCOTILLO, **Fouquieria splendens,** is one of the oldest of the desert shrubs growing on arid and rocky hillsides of Arizona and California and southward into Mexico. Its flame red flower tassels resemble buggy whips, but its cane-like stems are covered with spines. It is a peculiar plant in that it loses its leaves when the ground becomes dry.

CALIFORNIA ABUTILON
Abutilon californicum Benth.

Malvaceae
Mallow Family

Abutilon californicum is an erect, perennial, open branched shrub of the mallow family. Stems are woody above the thickened basal section and these are leafy to the apex. Covering the stems are brownish or yellowish tangled hairs. Height will range from 1 to 2.5 meters (3.3 to 8.5 ft.). Herbage is covered with dense, short, stellate hairs. Leaves are highly variable in size, 1.5 to 5 cm. in length. Leaf blades are broadly ovate and rounded or short tapering to the apex. Base of the leaf blade is open cordate, the recess being usually less than one centimeter deep. Margins of the leaf are dentate or with teeth rounded at the apex. The thickened leaves are somewhat tawny, the same color throughout or lighter beneath. Flowers open in the afternoon or evening and the period extends from March through August. These are solitary or occur in axillary clusters. Petals are light orange-yellow, 1 to 1.5 cm. long, little longer than the calyx lobes. Sepals are strongly angled, ovate, 6 to 8 mm. wide and 4 to 7 mm. long. The calyx is nearly as long as the mature carpels and is covered with short stellate hairs. Stamens are numerous and joined in a tube. Fruit consists of ten dehiscent carpels, each 10 to 12 mm. long. The carpels are oblong and not conspicuously inflated. They are gradually narrowed at the apex into a slender beak, 1.8 to 2.2 mm. long. Usually three ovules are present in each cell. Seed is subglobose to kidney shaped, 2 mm. in width and length, and dull dark brown. Seed is covered with short simple hairs.

Abutilon californicum growing amongst rocks adjacent to a saguaro 8 miles north of Mesa along Hwy. No. 87

Abutilon californicum, despite its name, is limited to southern Arizona in the United States. In Mexico it ranges from Sonora to Oaxaca and is also found in the cape region of Baja California. In Arizona the elevation of occurrence is from 610 to 1219 meters (2,000 to 4,000) ft. in the sonoran zone of Yavapai, Maricopa, Pinal, Pima, Santa Cruz, Cochise, and Graham counties. This species is colonial and locally abundant on dry rocky slopes, and in valleys and canyons.

California abutilon germinates readily from fresh seed which requires no pretreatment. It is not in cultivation at the Desert Botanical Garden, but is growing in a wild state at a site within view of the Garden. It is very drought hardy and is deciduous when subjected to an extended dry period. It grows on very rocky, coarse

soils in full sun or in partial shade under covering trees. This species would have limited value as an ornamental shrub as the flowers are small and open late in the day. It would be of interest as an unusual or rare shrub and is adapted to any dry desert garden.

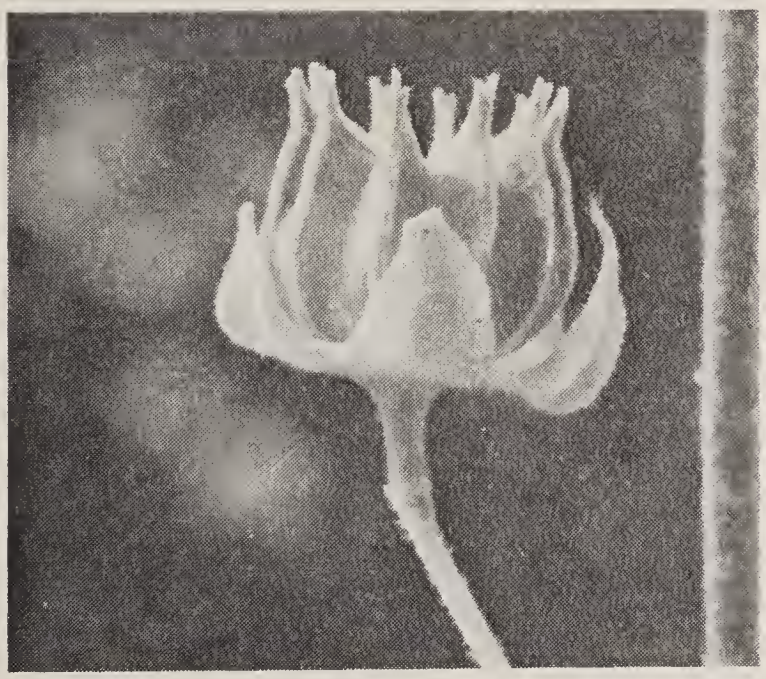
REFERENCES:

Kearney & Peebles, Arizona Flora.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.
Standley, Paul C., Trees and Shrubs of Mexico.

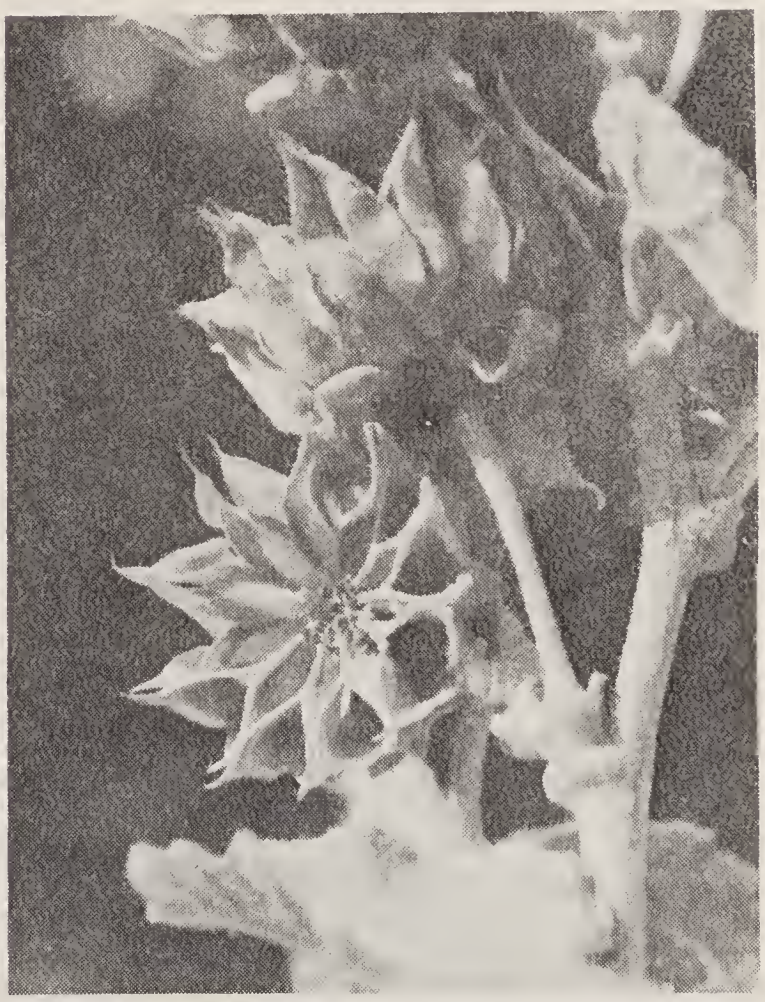
J.H.W.

1'' flowers of A. californicum

Side view of A. californicum flower.



Side view of A. californicum seed capsule.



Open seed capsules of A. californicum.

A. calfornicum photos by Lyle McGill

Arizona Cactus

MOHAVE HEDGEHOG
Echinocereus mojavensis
Cactaceae

This large mounded cactus will have up to nearly 500 heads when mature and staggers your imagination when one accidentally stumbles into it on the rocky hillsides and the wooded canyons of northwestern Arizona.

Drs. Engelmann and Bigelow described this plant as **Cereus mojavensis** which they collected while with Lieut. Whipple's expedition of 1853-54 which was a survey for a railroad between the Mississippi River and the Pacific Ocean. In 1856 Engleman named a similar plant in honor of Dr. Bigelow as **Cereus bigelovii**. In 1883 Rumpler in Handbook of Cactus placed the plant in the genus **Echinocereus**. The plant derived its name from the Mojave desert in which it was first found. Sometimes it is misspelled as **mohavensis**. In 1944 Dr. L. Benson relegated it to **Echinocereus triglochiatus** as a variety and still retains it as such in CACTI OF ARIZONA, revised, 3rd edition 1969.

Small heads of E. mojavensis.

E. mojavensis clump bearing red flowers.

This red to red-orange flowering plant has very long gray twisted spines which obscure the plant's pale green body and the small low heads causing it to blend into the color of the surrounding desert. The gray and sometimes pink central spines (1—2) are about 2''—3'' long, the 5—8 light gray radial spines are 1''—1½'' long.

The 1½''—2'' in diameter and same in length reddish flowers remain open for several days and nights in the low deserts but at higher elevations may remain open for nearly a week. Flowers appear in late March and into May at the higher altitudes. Fruits are ripe about 5—6 weeks later, covered with a few short spines which fall off revealing an oblong edible red berry with black seeds.

Type location — Collected along the Mojave River in California.

Distribution — On both sides of the Colorado River in SE California to Nevada, Arizona and into Utah at 3500'—8000' elevations throughout the Juniper-Pinyon-Pine woodland and into the California chaparral.

References:

Britton & Rose — Cactaceae
Benson, L. — Cacti of Arizona
Earle, W. H. — Cacti of the Southwest

W.H.E.

Mexican Cactus

COMPACTED PINCUSHION
Mammillaria compressa
Cactaceae

DeCandolle described this well known mammillaria in 1829 in the journal of the Mem. Mus. Hist. Nat. Paris. The plant has many variations in its tubercles, length and shape of spines, so much so, that DeCandolle in the same year unknowingly erected several species thinking they were different plants yet they were just variations of **M. compressa**. Since 1828 about twenty-five different names have been applied to this plant by various botanists each thinking their nomenclature correct.

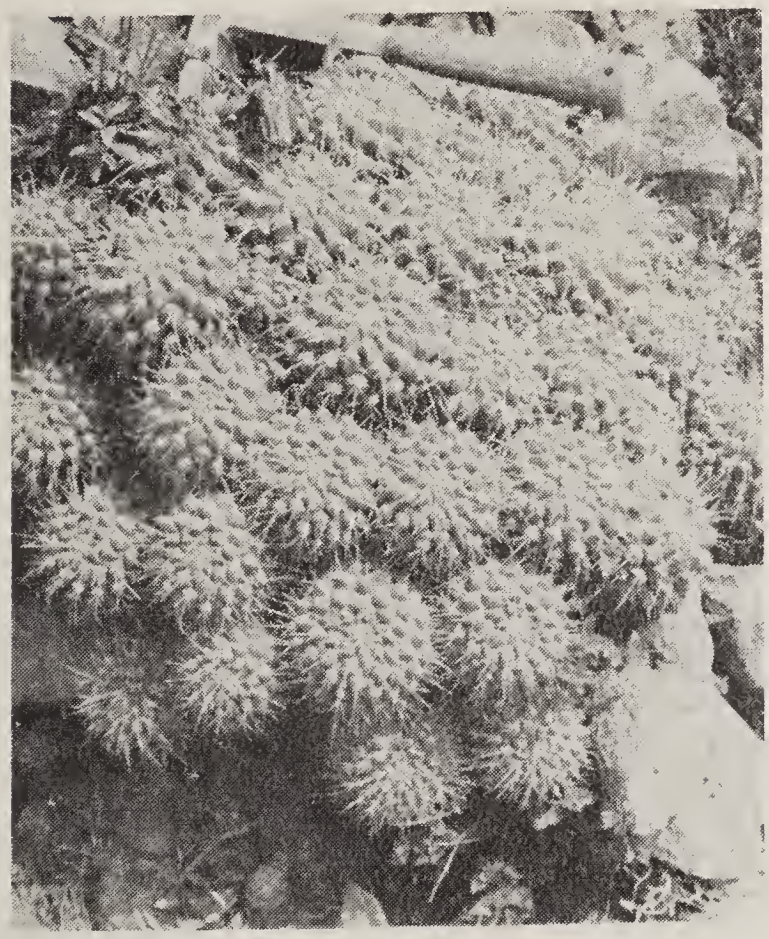
The body of the plant has a bluish green hue bearing radial spines that can either be short, long, curved, twisted, descending, porrect or erect. They are usually white in color but sometimes a pink to reddish coloration. Central spines are lacking and the areoles sometimes bear 1—3 short accessory spines in the lower part of their areole.

This lovely low cylindrical plant can be solitary for several years but eventually becomes cespitose in that many heads appear from its base and these in turn make offsets that are 3"—4" wide so that in 45—50 years you may have a large mounded plant with hundreds of striking colored heads. These attractive whitish mounds will creep around and over low rocks forming a most beautiful mass 2' wide and 4'—5' long. The solitary mounds may be up to 20" high and 40" wide.

A white wool remains at the base of the young areoles in each head for some time from which emerges the small pinkish flowers in March and April. Red, edible, clavate fruit about ½"—¾" long form during the summer months and contain many small brown seeds.

M. compressa is a very easy plant to grow in the shade or in the sun. Those plants with long spines naturally can withstand the heat of the desert sun. Those plants with the short spines making the plant appear naked should have protection against the sun's hot rays.

No exact collection locality is cited for this plant but it is very abundant around Ixmiquilpan and Tasquillo, Hidalgo. Further distribution is found in the additional states of Queretaro and San Luis Potosi.



A two foot wide clump of M. compressa 6 miles south of Zimapan, Hildago.

REFERENCES:
Bravo, Helia — Las Cactaceas de Mexico
Britton & Rose — Cactaceae
Craig R. — Mammillaria Handbook

W.H.E.

Another habitat of *Mammillaria compressa* 6 miles south of Zimapan, Hildalgo. Other plants are *Myrtillocactus geometrizans, Cylindropuntia imbricata* and probably *C. amyclae.*

GARDEN ACTIVITIES

APRIL

Thurs.	1st	LECTURE—Arizona Wildflowers	3:00 P.M.
Tues.	6th	CACTOMANIACS meeting	8:00 P.M.
Wed.	7th	CLASSES—Cultivation of Trees and Shrubs	3 & 8 P.M.
Thurs.	8th	LECTURE—Arizona Trees	3:00 P.M.
Sat.	10th	NATURE TRIP—Top-of-the-World (65 miles)	8:30 A.M.
Mon.	12th	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	13th	BONSAI SOCIETY—Pre-show Meeting and Slide Show	7:30 P.M.
Wed.	14th	CLASS (afternoon) FIELD TRIP—Brushy Basin	8:30 A.M.
Thurs.	15th	LECTURE—Arizona Birds	3:00 P.M.
Sat.	17th	CLASS (evening) FIELD TRIP—Brushy Basin	8:30 A.M.
Sat-Sun.	17-18th	BONSAI SOCIETY SPRING SHOW	9-5 P.M.
Mon.	19th	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Thurs.	22nd	LECTURE—Arizona Scenics	3:00 P.M.
Tues.	27th	BONSAI SOCIETY Workshop—Summer Care of Bonsai	7:30 P.M.
Thurs.	29th	LECTURE—Collecting in Mexico	3:00 P.M.

MAY

Sun.	2nd	ANNUAL MEMBERS MEETING	3:00 P.M.
Mon.	3rd	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	4th	CACTOMANIACS—Potluck supper	6:30 P.M.
Sat.	8th	NATURE TRIP—Mingus Mountain (120 miles)	8:30 A.M.
Mon.	10th	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	11th	BONSAI SOCIETY—Election of Officers	7:30 P.M.

THE DESERT BOTANICAL GARDEN

P. O. Box 5415

Phoenix, Arizona 85010

4/71

ARIZONA CACTUS & NATIVE FLORA SOCIETY, INC.

THE DESERT BOTANICAL GARDEN

Ballot for annual election of Board Members. Please vote for three members and mail in time to reach Phoenix by April 30, 1971.

MRS. ALICE FEFFER ---------- ☐

MRS. ANGELA BOOL ---------- ☐

RICHARD SNELL ---------- ☐

Use these lines for 'write-ins':

_____ ☐

_____ ☐

_____ ☐

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXV May, 1971 No. 5

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXV | May, 1971 | No. 5

Arizona Cactus and Native Flora Society

EXECUTIVE BOARD

Chairman of Board....John H. Eversole
President.....John H. Rhuart
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Treasurer.....Tom Goodnight
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ADVISORY BOARD

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James Cahill, Mrs. Geraldine Eliot, Mrs. Charles Gilliland, Mrs. Homer Lininger, Miss Eleanor B. Sloan, Donald W. Hutton

Table of Contents

Editor's Notes 51
California Buckwheat, *Eriogonum fasciculatum* 52
Mexican Cactus, *Mammillaria geminispina* 53
Cactus Show Ribbon Awards (concluded) 56
Our Protected Native Plants 58
Frost Flower, *Milla biflora* 59
Arizona Cactus, *Echinomastus acunensis* 60
Garden Activities 60

COVER: Night-blooming *Eriocereus pomanensis*

Desert Botanical Garden of Arizona

STAFF

Director ..... W. Hubert Earle
Horticulturist ..... John H. Weber
Secretary ..... Barbara Worbington
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Curator of the Herbarium ..... J. Harry Lehr
Maintenance and Bookstore ..... Donald C. Shelstad
Maintenance and Bookstore ..... Lynn Trainum
Student Horticulturists ..... Lyle McGill, David Squire, Dennis Shelstad

Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

The Annual Members' Meeting will be held on May 3rd in the Richter Memorial Library at 3 P.M. We urge all members to attend this meeting. It is your chance to speak up, and also to learn of the activities planned for 1971-72.

The Financial Report, usually published in the May Bulletin, will have to appear in the June-July issue this year, since the Annual Board Meeting will not be held until the latter part of May.

"Outdoor Arizona", formerly "Arizona Wildlife Sportsman", is now on the newsstands. For the March issue of the magazine your Editor was asked to do a story on Arizona's cacti. The article dealt with some of Arizona's outstanding cacti and stressed the importance of their preservation. It was presented very handsomely in the magazine, three pages with eight good-sized photos.

Construction of a Herbarium here at the Garden has been approved by the Board, and plans will now be drawn up for contractors' bids. Construction begin this spring. We have recently had to purchase three new herbarium cases for the present herbarium, and Harry Lehr, curator of the herbarium, has them about filled. There is a definite need for more space, and when Dr. Howard Gentry arrives at the Garden this summer, with his own herbarium sheets and books, our new herbarium will be a beehive of activity.

On May 10th through 14th, the 14th Biennial Convention of the Cactus & Succulent Society of America will be held at El Paso. We hope you plan to attend this gathering of cactophiles from all corners of the country.

The C&S Society also sponsors "Cactus Expo '71", the sixth annual cactus and succulent show to be held in July. The location will be the Los Angeles State and County Arboretum, 301 N. Baldwin Avenue, Arcadia, Calif., and the dates will be July 3, 4 and 5 from 9 a.m. to 6 p.m. No admission or entry charges.

For information, entry forms and show schedules, write to William Lockwood, 2481 Las Lunas St., Pasadena, California 91107.

Several educational exhibits made by John Hales, Joy Lee Schroeder and John Weber, which were displayed in our 24th Cactus Show last February, will again be on display at the Los Angeles show.

Mr. Warwick Watson, Superintendent of the Royal Botanic Gardens, Sydney, Australia, will be our guest here on May 7th and 8th. (These notes are being written in April.) He is on a world tour of outstanding gardens, "to seek", as he says, "first-hand information and experience on their horticultural and administrative methods in educational classes." He is quite pleased with the information we have sent him about our educational program, and plans to attend one of our classes on the propagation of desert trees and shrubs.

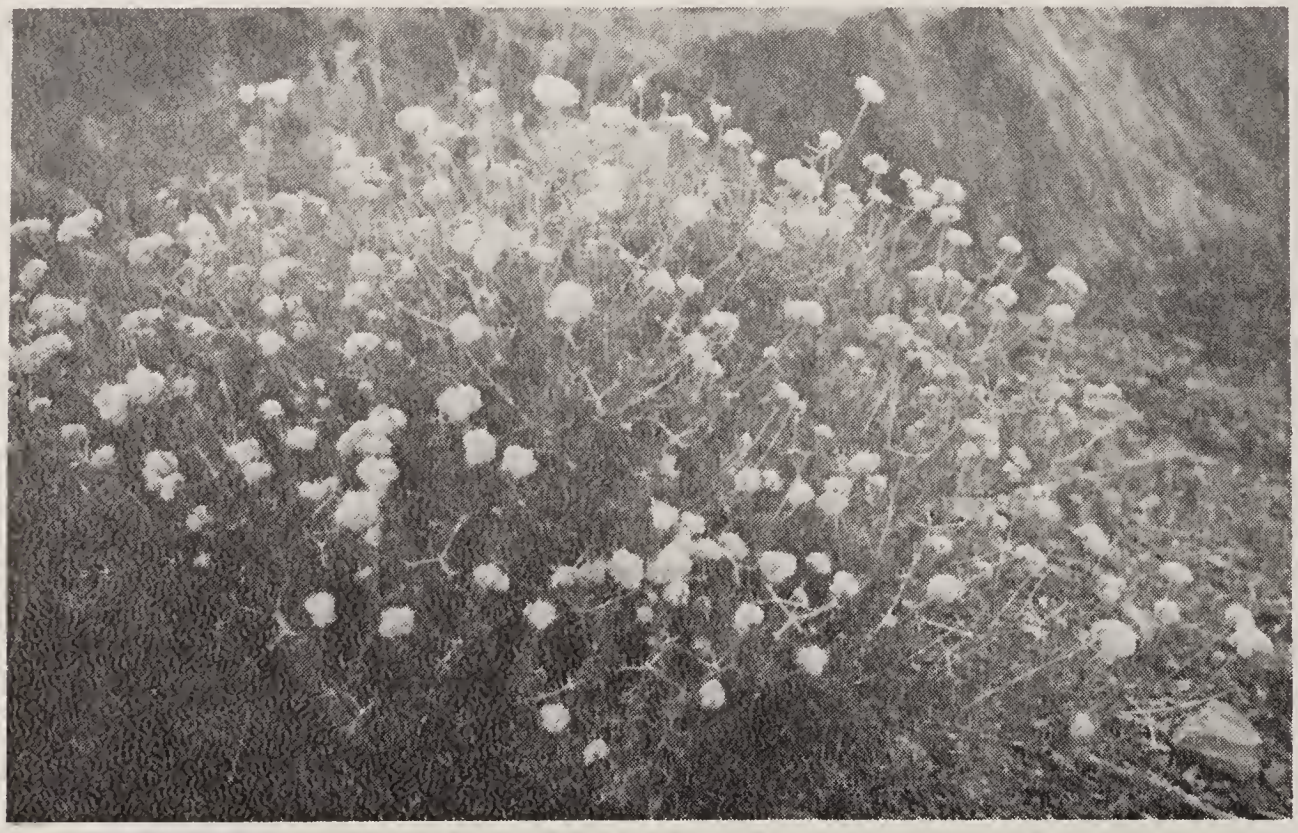
We were unable to publish in the May Bulletin the final section of the list of award winners in this year's Cactus Show. You will find it in this issue. Our apologies to the photographers and artists who had to wait so long to see their names in print.

CALIFORNIA BUCKWHEAT
Eriogonum fasciculatum
Benth.

Polygonaceae
Buckwheat Family

Eriogonum fasciculatum is a small, rounded shrub with spreading branches that are almost reclining. The stems are without hairs or very thinly covered with short white hairs. Shrub height ranges from 0.6 to 1 meter (2 to 3.3 ft.) tall. Bark is woody and gray, becoming shredded on the older and larger stems. Leaves are fascicled in close bundles in alternate positions along the stems and twigs. The green, leathery leaves are linear to linear oblanceolate in shape, and are 5 to 18 mm. long. Leaf margins are rolled under. Upper surface of the leaf is covered with long, soft, white hairs and the lower surface is matted with intertangled white hairs. Flowering period extends from March to November. Flowers are numerous in dense headlike clusters borne at the tips of short leafless scapes. The scape is pubescent with short white hairs. There is a slight fragrance to the flower which is very small, measuring only 2.5 to 3 mm. long. Petals are pale pink and white with midribs of deeper color. Calyx lobes are broadly oblong to obovate and are covered with very short hairs on the outer surface. Fruit is an achene which is dry, one-seeded, and does not split to release the seed. The achene is 3 to 3.5 mm. long, ovoid, brown in color and shining.

The California Buckwheat is common to abundant at elevations from 300 to 1370 meters (1,000 to 4,500 ft.). In Arizona it is found in Coconino, Mohave, western Gila, Pinal, Maricopa, Pima, and Yuma counties. The range extends also into southern California, southern Utah, and northern Baja California, Mexico. It grows mainly on poor rocky soils in exposed areas on dry rocky slopes, mesas, and in canyons.



In March and April the profuse blooming of California Buckwheat colors the desert even when it is too dry for annuals to flower.

The many-flowered clusters combine white and two shades of pink.

Eriogonum fasciculatum has not been used, to our knowledge, in desert garden landscapes. It is a handsome shrub in flower and is very drought-hardy, requiring no care once it is established. Seed can be collected on ripening and be broadcast in open areas to germinate under natural conditions. Requirements for growth are well-drained soil and full sun exposure.

This plant often has twisted main stems with shredded bark, and the dead stems make an interesting item for use in dried arrangements. This species also has great potential for use in bonsai work, with its twisted stem and low branching habit.

REFERENCES:
Kearney & Peebles, Arizona Flora.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.
Van Dersal, W. R., Native Woody Plants of the United States.
Range Plant Handbook, U.S.D.A. Pub.

—JHW

Mexican Cactus

TWIN-SPINED PINCUSHION
Mammillaria geminispina

Cactaceae

At first glance this beautiful clumped cactus may look like **Mammillaria compressa** (see SAGUAROLAND, April 1971), but closer examination shows that it has one or two pairs of long, stiff white central spines. In each pair one spine is a little longer than the other and is slightly upcurved.

The plant begins as a solitary plant. As it grows it become cespitose. New stems arise from the base, and out of these new stems others grow, with the plant eventually forming a mound one and a half feet high and two and a half feet wide, comprised of more than fifty attractive white heads.

Stems are cylindrical, blue to grayish-green, and very spiny, with copious wool

This clump of *M. geminispina* is about thirty inches in diameter.

between the areoles and the apex. Radial spines, sixteen or more, are stiff, about three-eighths inch long, and pure white.

The flowers are not only small, being a half to three-quarters of an inch across, but are also partially hidden by the dense spines. They have red inner petals with a carmine midrib and appear in late April and in May. The red clavate fruit add to the attractiveness of the plant.

M. geminispina tolerates hot sun and is found with other small cacti on hillsides in central Mexico, usually in the State of Hidalgo. It is an easy plant to grow from offsets, which root readily in our own desert sun.

Type locality: Hidalgo.

Distribution: Central Mexico.

Reference:

Borg, Cacti.

——WHE

Here in Hidalgo where *M. geminispina* is found, there is a large population of Old Man Cactus (*Cephalocereus senilis*) and other cacti.

MEMO

from: Barbara Worbington

to: Garden Members

Going away for the summer?

Please let us know your forwarding address

so the Bulletin can follow you!

ASPECTS OF THE DESERT

The high desert of northeast Arizona is the site of Monument Valley, probably the most photographed, if not the most photogenic, part of the state. In any light the wind-shaped red sandstone is striking, but sunset intensifies the coloring of the rocks and makes them glow.

24th ANNUAL CACTUS SHOW RIBBON AWARDS

(Conclusion)

SECTION V. CLASS A. BLACK & WHITE PHOTOS.
FLOWERS. 1st, Agnes M. Holst. 2nd, Mr. Dick Raymond.
FAUNA. 1st, Agnes M. Holst. 2nd, and 3rd, John H. Walter.
PLANTS. 1st and 2nd, Agnes M. Holst. Honorable Mention, Miss Joy E. Mitchell.
LANDSCAPE. 1st, Michael B. Palmer. 3rd, Miss Joy E. Mitchell.
CLASS B. COLORED PHOTOS

1. COLORED PRINTS. 1st, Mrs. Dorothy Seideman, Landscape. Honorable Mention, Mrs. Dorothy Seideman, Landscape. Honorable Mention, Miss Joy E. Mitchell.
2. TRANSPARENCIES. Plant — 1st, Mr. Robert H. Bloedel. 2nd, Miss M. Genevieve Evans. Landscape — 1st, Mrs. Lesley G. Evans. 2nd, Miss M. Genevieve Evans. 3rd, Mrs. Lorraine Matthes. Flora — 1st, Agnes M. Holst. 2nd, Mr. John Matthes. 3rd, Mrs. Sarah B. Foster. Honorable Mention, Mr. Al. Wilson. Fauna — 1st, Mr. John H. Walter. 2nd, Agnes M. Holst. 3rd, John H. Walter. Fruit — 1st, Mrs. Sarah B. Foster. 2nd, Mr. Wayne C. Foster.

Some of the attractive art entries in this year's Cactus show. These three were hung on the Auditorium's west wall.

CLASS C. OIL PAINTINGS. Flower — 1st. Mr. Peter C. Gulatto. 2nd, Mrs. JoAnn Budziszewski. 3rd, Mrs. Carol E. Amy. 4th, Rose Bosack. Landscape — 1st, and 3rd, Mrs. Adrienne Roscoe. 2nd, Mrs. E. E. Smith. Honorable Mention— Mrs. Ruby B. Jennings. Plant — 1st, Rose Bosack. 2nd, Helen B. Sands.

CLASS D. WATERCOLOR. 1st, Mrs. Ruth Blomeyer. 2nd, Mrs. Adrienne Roscoe. 3rd, Isabelle Holt. Honorable Mention, Kenneth C. Balcomb.

CLASS E. DRAWINGS. Ink, Pencil, Chalk. 1st, William Hookway. 2nd, William Hookway. 3rd, Isabelle Holt.

CLASS F. ANY OTHER MEDIUM.

1. ACRYLIC & PASTEL. 1st, Rena Norviel. 2nd, Bill Manderfield. 3rd, and Honorable Mention, Mrs. Ruth Blomeyer.
2. PLAQUE. 1st and 3rd, Mrs. Valerie Nelson. 2nd, Chas. E. Mieg.
3. SCULPTURE. 1st and 3rd, Judy Smith. Honorable Mention, Judy Smith and Chas. E. Mieg.

CLASS G. NATURAL DESERT WOODS. 1st, Mrs. Pat Kelly. 2nd, Mrs. Judy Smith. 3rd, Mrs. Emma Oscarson. Honorable Mention (2) Wayne Fernyhough.

SECTION VI. EDUCATIONAL. 1st, Miss Ethel Twitchell. 1st, Mrs. John Alsever. 2nd, 3rd, and 4th, John Hales. TROPHY AWARDS to Miss Ethel Twitchell and to Mrs. John Alsever.

SECTION VII. JUNIOR CLASS

POTTED PLANTS (Cacti). 1st, Heide Dunn. 2nd, Duane Mumford. 3rd, Todd Kerr. 4th, Terry Mahoney. (Also) 4th, David Bauer.

POTTED PLANTS (Succulent) 2st, Shannath L. Merbs.

ARRANGEMENTS. DISH GARDEN (CACTI) 1st, Mark Nelson.

MINIATURE ARRANGEMENTS (Under 5") 3rd, Mark Nelson. 4th, Pat Nelson.

SMALL ARRANGEMENT (5" to 8") NATURAL DRIED DESERT. 1st, Mark Nelson. 4th, Pat Nelson.

INDIAN INFLUENCE. 2nd, Mark Nelson.

MEXICAN INFLUENCE. 3rd, Mark Nelson.

BUTTON GARDENS. 1st, Pat Nelson. 2nd, Mark Nelson.

DESERT WOODS. 1st, Jimmy Penberthy and 1st, Heide Dunn. 2nd, Duane Mumford (Desert Concretion). 3rd, Mike Mulder (Petrified Wood).

ARTS — 1st. Greg Beroza (Collage). 2nd, Johnny Strader (Pencil). 3rd, David Strader (Pencil). 4th, David Strader (Pencil).

EDUCATIONAL. 1st, Pat Nelson — Trophy Best Junior Entry in Show.

This corner of the Auditorium displayed cactus flowers and desert scenery on the wall, and succulent plant specimens below.

OUR PROTECTED NATIVE PLANTS

Editor's Note: Most of our readers know about the Native Plant Law, but you may not know the details. The following summary has recently been issued by the Arizona Commission of Agriculture and Horticulture.

Nowhere in the United States are there more rare and unusual native plants than in Arizona. Most of them are many years old and cannot be replaced. Tourists visiting this State and also many residents desire to use these "Wonders of Nature" in their landscaping. Since these plants grow on the desert, it is only natural for one to believe the plants can just be removed and taken home.

The Commission of Agriculture and Horticulture would like to explain to new residents and homeowners the requirements of the Arizona Native Plant Law.

1. Many of Arizona's native plants are protected by the Native Plant Law. To remove and transport these protected plants from private, State, or Federal land, you are required to have the written permission of the landowner and a permit issued by the Commission.

2. Application blanks for the removal and transportation of protected native plants can be obtained by calling the Commission at 271-4191, or writing to P.O. Box 6189, Phoenix, Arizona 85005, or at any of our District Offices located in Parker, Yuma, Casa Grande, Tucson, Willcox and Safford.

3. The permit applications are to be made out by the landowner. He signs the document with his name, address and telephone number, and legally describes the property owned by him. He also names the person or persons with their address who are receiving permission to remove or transport the plants. The number and kind of plants must also be listed.

4. When the application for permit is completed, it is to be presented at the Commission's main office located at 1688 West Adams, Phoenix, or at one of our District Offices, for approval and verification of information listed. If everything is in order the permit is issued immediately.

5. The Native Plant Law requires that when a permit is issued, all protected native plants listed on that permit must have a native plant tag and seal attached firmly to each during removal and transportation. The tags are to remain on the plants until they are planted on the homeowner's grounds. The homeowner keeps the tags in his possession to show that the plants were obtained legally, if an investigator makes inquiry.

6. The native plant tags require a fee of $1.00 for each saguaro cactus and 50 cents each for all other protected native plants. The monies collected are used only for the enforcement of this law.

7. All peace officers in Arizona assist the Commission in enforcing provisions of the law. Violations of this law are a misdemeanor and are punishable by a maximum fine of $300 for each offense. Each offense means each illegally removed, transported, destroyed, or mutilated protected native plant.

8. Please remember additionally that all land in Arizona is owned by someone, even if it is not fenced or posted, and any person illegally removing plants or property from these lands can face a charge of theft.

9. Copies of the Arizona Native Plant Law, or information relating to the law, may be obtained by visiting, writing, or calling any Commission office.

Arizona Wildflower

FROST FLOWER
Milla biflora

Liliaceae
Lily Family

It's almost a rule that the most attractive flowers will have the greatest number of common names. **Milla biflora** has at least seven that we know of: Frost Flower, Mexican Star, Floating Star, Estrellita, Lilia Cimarron (wild lily), Flor de San Nicolas, Azucena Silvestre (white wood lily)—which should indicate that this is an exceptionally attractive flower, and it is.

Frost Flower is a fragrant, waxy, white star, more than two inches across, on a wiry stem that is six to eighteen inches tall. The leaves are grasslike, sparse, and rise from a corm or "bulb", typical of all lilies. Adding to the charm of the blossom are the soft apple green stripes on the underside of each petal.

Although it is found in southern Arizona and New Mexico, it is much more common in Mexico, as far south as Oaxaca, where it is a popular flower for bouquets.

Few plants provide better cut flowers than Frost Flower. It lasts a long time in water and its pure white is most effective against greenery. It takes easily to "domesticity", and has been a garden flower for many years. In colder climates than Arizona's, the plants are set out in the spring and lifted before winter, but in Arizona they can be planted in filtered shade and left in place all year around. Some nurseries carry them in stock or can order plants or corms for you.

In the wild, Frost Flower blooms in August and September, but in gardens it will start to bloom in early July and continue to produce flowers until fall.

DISTRIBUTION: In Arizona, in open pine or oak woods at 4000 to 7000 ft.; Cochise, Santa Cruz and Pima counties near the Mexican border.

REFERENCES:

Bailey, L.H., Standard Cyclopedia of Horticulture
Kearney & Peebles, Arizona Flora
O'Gorman, H., Mexican Flowering Trees and Plants
Pesman, W., Meet Flora Mexicana

——LD

Arizona Cactus

PINEAPPLE CACTUS
Echinomastus acunensis

Cactaceae

In 1953 this miniature barrel cactus was brought to the attention of W. Taylor Marshall, then director of the Desert Botanical Garden, who immediately recognized it as a new plant, and named it after the Acuna valley near Ajo in southwest Arizona where it was first discovered. In this area the plant extends south into Sonora, Mexico. Another colony has been found near the Gila River, east of Florence in south central Arizona.

As a juvenile plant, E. acunensis resembles a young E. intertextus (the Woven-Spine Pineapple), but in growth the red pectinate spines grow upward, giving the six to nine inch tall stems a distinctive appearance. The well-spaced spine clusters stand out from a gray-green body about four inches in diameter.

Tubercles are one-quarter to one-half inch long, and somewhat flattened when the plant is turgid. Each is capped with a cluster of spines with three or four stout centrals, the upper one erect, and about twelve spreading radial spines.

Lovely coral pink to red flowers, about two inches in diameter, rise from the plant's apex in late March and early April. Fruits are light green, dry, and split along the sides to reveal small black seeds.

Lyman Benson in his third revised edition of The Cacti of Arizona (1969) has set the plant up as **Neolloydia erectocentra** var. **acunensis** because the flower and fruit appear in a felted area on the upper side of the tubercle, as is typical of the genus Neolloydia.

Type locality: Acuna Valley, Organ Pipe National Monument, Arizona.

Distribution: 1300-2000 ft. on hills and flats of the desert from western Pima County in Arizona. Sonora in Mexico.

References:

Benson, Cacti of Arizona
Earle, Cacti of the Southwest

——WHE

GARDEN ACTIVITIES

MAY

Sun.	2nd	ANNUAL MEMBERS MEETING	3:00 P.M.
Mon.	3rd	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	4th	CACTOMANIACS—Potluck supper	6:30 P.M.
Sat.	8th	NATURE TRIP—Mingus Mountain (120 miles)	8:30 A.M.
Mon.	10th	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	11th	BONSAI SOCIETY—Election of Officers	7:30 P.M.

No lectures or classes given from mid-May through October.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXV June-July, 1971 No. 6

REG MANNING

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXV | June-July, 1971 | No. 6

Arizona Cactus and Native Flora Society

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Vice President.....Edward Burrall
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Table of Contents

Editor's Notes 63
Report of Annual Meetings 64
Financial Report 65
Aspects of the Desert 67
Groundsel, *Senecio neomexicanus* 68
Garden Construction 69
Squaw-berry, *Lycium berlandieri* 70
Herbert W. Bool 72

Cover: A single Saguaro that grew eight trunks as a result of injury to the growing tip.

Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

The Editor's Notes this month will consist of the Director's Report for 1970-71.

The Garden's annual income was the largest ever, and for the second consecutive year went over one hundred thousand dollars, with a large differential much of which will go to Garden improvements for 1971-72. Last year a budget was set up for 1970-71. Both income and liabilities exceeded the estimate, but there was a substantial increase in cash income.

Attendance was less than it was last year, quite probably because there are now more museums in the city and in other parts of the state. (Other institutions open to the public have always recorded a drop in attendance in similar circumstances.) Surprisingly, though, our sales were the highest we have ever had. It seems that our visitors were buying more, although our merchandise in the gift shop is in the "quality" price range. We feel that the installation in February of six new display counters, increasing the eye-level display area, has contributed to the advance in sales, which averaged $0.80 per person as compared to $0.69 per person last year.

Last year we increased the suggested entrance contribution (so far the Garden does not charge an entrance fee) from 25c to 50c per person. This year's contributions averaged 22c per person as against 14c per person entering the Garden during the last year.

The Garden has accessioned many new plants from gifts and from collecting trips. Large collections, such as the one from the late Dr. Clifford M. Schroeder, have been planted in the Garden or retained in the propagation house.

The Garden, has sent Seed Exchange Lists to Botanical Gardens throughout the world, and has received requests for 260 packets of seeds from 26 Gardens. We, in turn, have received seed lists from numerous other gardens. We have requested few seeds because a great number of plants are not adaptable to desert conditions in an out-of-doors garden such as ours, but we are always eager to try new arid-climate plants and are glad to send seeds that we have collected to Gardens in other climates.

We were most happy to have two lovely shows at the Garden, the fall and spring shows of the Phoenix Bonsai Society. They attracted many persons to the Garden and were appreciated by the general public as well as by Bonsai enthusiasts.

Our 24th Annual Cactus Show was well attended and a most interesting Show, with excellent specimen plants, arrangements, and educational displays. These last were the work of John Hales, Joy Lee Schroeder and John Weber.

An activity that drew capacity classes was Janet Alsever's series of lessons on the preservation of flowers, which took place during late April and early May. Many persons who could not attend hope that the classes will be repeated next year.

Memorials to Paul Matsusaki and to Hiram Pratt were completed, and photos of each are shown in this Bulletin.

(Continued on page 71)

MEMBERS' ANNUAL MEETING

May 2nd, the first Sunday of the month, was the date of the annual Members' Meeting. John Rhuart presided and Alice Feffer acted as secretary in the absence of Secretary Angela Bool.

About three hundred mailed-in votes were tabulated by Mrs. Paul Neumann and Miss Helen Seder. Incumbent Board Members Angela Bool and Richard Snell were reelected for three-year terms. Several write-in votes were recorded.

During the counting of write-in votes, a report of past activities and future plans for 1971-72 was given by Director W. H. Earle. A preliminary financial report was also given, which showed that the Garden exceeded its anticipated income by a substantial margin. This money will be used for 1971-72 projects at the Garden.

Deep regrets were expressed for the loss of our Secretary's husband, Herbert W. Bool, a staunch supporter of the Garden since 1936.

THIRTY-SIXTH ANNUAL BOARD MEETING

Executive and Advisory Board members and their spouses met for another successful dinner and meeting at the Westward Ho Hotel's Club de Concho on May 25th.

Treasurer Tom Goodnight reviewed the Financial Statement, emphasizing the annual gains which were the highest in our history, and remarked on the most healthy amounts in our bank accounts.

Ed Burrall, who has been working on our retirement plan for employees, introduced Mr. A. Tomlinson of Penn Mutual Life Insurance Company, who explained details of the plan most suited to our needs. The Board accepted this plan, which will give an employee, at no cost to himself, additional returns when he retires, up to 52% of his retiring salary, Social Security paying about 25% of this 52%. The cost of this plan will be reduced from the current premium of $6000 to about $2500 in ten years, as it applies to our present staff. This excellent plan will provide added financial security for our employees.

Since your Director would not qualify for the retirement plan because of his present age, the Board voted to purchase an annuity, payable in five years, for which your Director is most grateful.

Comparison of our 1970-71 income with the previous year's shows increases in memberships, contributions, voluntary admissions, and a 25% increase in our endowment. Sales income was just about 25% higher. Our operating expenses were about 22% higher, the capital improvement costs were three times that of last year, and our sales inventory was 20% higher.

Our anticipated Garden Improvement program includes many needed projects for the coming year, which we hope to be able to complete. However costs may rise and we may have to shuttle some projects into next year's program — we'll see.

1971 — 1972 GARDEN IMPROVEMENT PROGRAM

Herbarium	$25,000.00
Herbarium furnishings	4,600.00
Grade and black-top road into service area and for parking	8,500.00
Move Shop and Storage	2,700.00
Parking shelter	1,000.00
Move butane tank and build wall	150.00
Re-roof auditorium and restroom	850.00
Septic tank for apartment	750.00
Memorial Building bronze date plates	300.00
	$43,850.00

ARIZONA CACTUS & NATIVE FLORA SOCIETY, INC.
SPONSORING THE
DESERT BOTANICAL GARDEN

FINANCIAL REPORT

5-1-70 — 4-30-71

	Comparison	
ASSETS	**1970-1971**	**1969-1970**
Accounts Receivable	$ 424.44	$ 532.91
Inventory	11,827.89	9,824.28
Deposit State Compensation Fund	325.00	222.00
Cash		
Retirement Fund	16,423.60	8,000.00
Valley Nat'l Bank (Checking Acct.)	5,623.84	3,300.06
V.N.B (2 Certificates of Deposit)	15,286.71	15,000.00
V.N.B. (Savings Account)	12,711.41	3,899.54
1st Federal Savings (C. of D.)	3,237.42	3,072.89
1st Federal Savings (Savings Acct.)	1,845.60	1,180.47
Petty Cash & Cash Register Money	289.00	289.00
	$67,994.91	$45,321.15
In Trust		
Lois Earle Memorial Fund	$ 3,624.75	
Clifford M. Schroeder Memorial Fund	858.00	
LIABILITIES		
Accounts Payable	411.12	1,447.62
Arizona State Withholding Tax	43.46	37.23
State Compensation Fund	47.11	37.98
	$ 501.69	$ 1,522.83
INCOME		
Retail	76,031.80	70,142.82
Wholesale Garden Books	3,466.00	3,188.45
Wholesale Seeds	1,716.70	97.00
Contributions	1,564.39	143.85
Voluntary Admissions	20,807.52	14,333.50
Memberships	8,014.00	6,456.50
Endowment	20,000.00	14,350.00
Library Gifts	251.60	196.44
Interest & Dividends	1,090.65	618.35
Miscellaneous	463.84	43.56
	$133,406.50	$109,570.47

EXPENDITURES

Purchases for Bookstore Resale	45,751.71	32,680.95
State Sales Tax (Retail)	2,207.33	2,112.32
Gross Wages	38,820.07	33,363.59
Payroll Taxes (Federal, Employer)	2,131.65	1,617.33
Office Supplies	1,516.93	3,787.83
Library Books, Subscriptions, & Supplies	332.58	707.84
Herbarium Supplies	199.66	——
Monthly Saguaroland Bulletin	2,696.01	1,516.71
Utilities	3,192.06	2,862.76
Fleet Expenses	2,003.70	1,278.48
Insurance — Life, Accident & Hospital	2,340.16	2,629.00
Insurance — State Compensation Fund	680.46	257.83
Insurance — Fire, Theft, Liab. & Property Damage	2,133.80	1,806.24
Cactus Show	423.45	349.19
Travel, Entertainment, Public Relations, & Misc. Expenses*	18,313.59	988.34
Advertising	352.36	466.73
Garden & Building Maintenance	2,307.20	1,024.84
Lease	25.00	25.00
Wholesale Books	70.65	17.46
Capital Improvements: Archer House, Electrical wiring $837.91. Pratt Memorial $400.45. Bridge culverts $381.28. Brick wall in front of Visitors' Building $234.37. Metal Bed in Truck $134.30. Pipes for Ramada $50.18. Three Herbarium storage cases $645.00. One Library desk and typewriter $274.82. One circular saw $62.97. One photo-slide cabinet $203.00. Display cabinets for the Visitors' Building $650.00.	3,874.28	1,037.15
	$129,372.65	$88,529.59

*Misc. Expenses — Category for checks written for funds transferred to Savings Account (16,000.00).

ATTENDANCE of 94,685 persons contributed **$20,807.52** or **$.22** per person to Voluntary Admissions during 1970-71.

RETAIL SALES of **$76,031.80** divided by **94,685** persons averaged at **$.80** per person.

MEMBERSHIPS	**1353**	1970—1971	**993**	1968—1969
	1113	1969—1970	**876**	1967—1968

(Continued on page 72)

ASPECTS OF THE DESERT

Beaver Tail Cactus is strikingly beautiful when it blooms in early spring. This western Arizona prickly-pear (**Opuntia basilaris**) has two-inch-wide purple, magenta or pink flowers. The pads are shaped like a beaver's tail and bear clusters of hair-like glochids instead of spines.

Arizona Wildflower

GROUNDSEL
Senecio neomexicanus

Compositae
Sunflower Family

The Genus Senecio, nearly worldwide in distribution, is probably the largest genus in the vegetable kingdom, containing about 1,300 species, some of them herbs and some of them shrubs. Looking at this daisy-ish Arizona species, it is hard to believe that it's a member of the same family (to say nothing of the same genus) as the gigantic Senecio keniensis from the mountains of East Africa, which grows as high as twenty-five feet and looks vaguely like a giant yucca.

Here in Arizona there are twenty - seven Senecios. One of the most abundant and widely distributed species is **S. neomexicanus**, found at elevations of 3,000 to 9,000 feet, from the White Mountains in the north to the Chiricahua Mountains on the Mexican border.

From a stout perennial rootstock, **S. neomexicanus** puts out thickish basal leaves, often tinged with purple, that are reminiscent of dandelion leaves, but have rounded tips. The stems, one to three in number, are six to twenty-four inches tall and are covered with a fine white wool, and the stem leaves are much smaller and narrower than the basal ones. As with other Composites, the "flower" of this groundsel is really a head consisting of small, crowded disc flowers in the center, and long, petal-like ray flowers on the perimeter. The heads of **S. neomexicanus** are about an inch in diameter and are a bright gold-yellow, with many disc flowers but relatively few ray flowers, only ten to thirteen of them.

You can find **S. neomexicanus** in bloom somewhere in Arizona from April through August. It is most common in oak-chaparral country, but is also found in pine woods and occasionally in the upper desert.

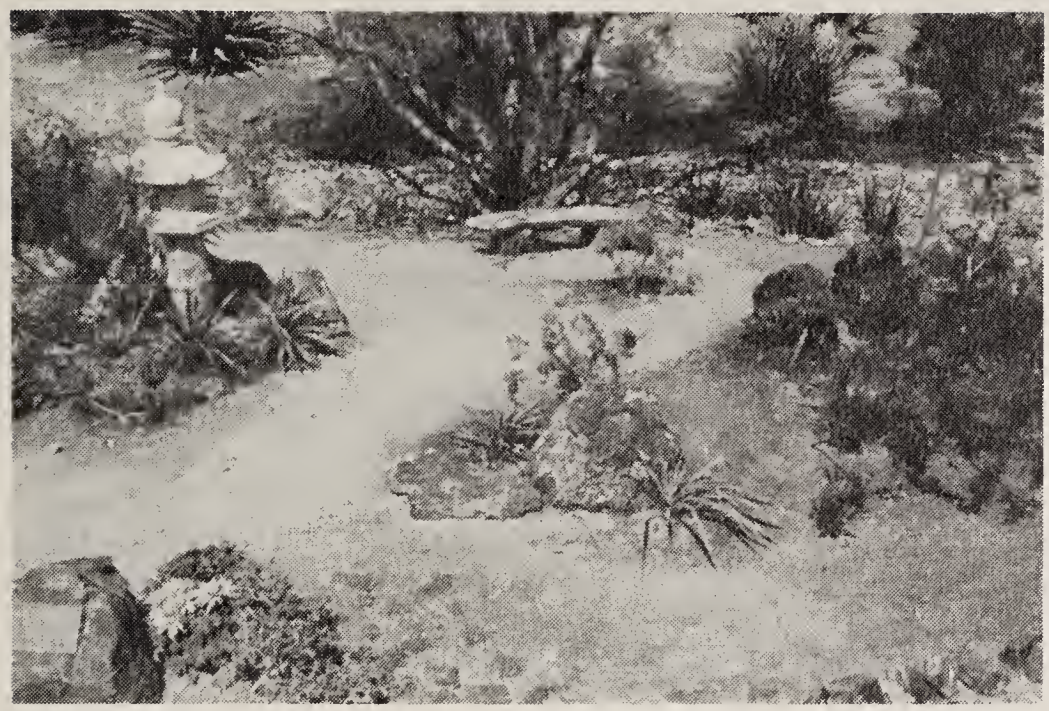
Distribution: Arizona, New Mexico and Colorado. In Arizona, Apache County south to Cochise, Santa Cruz and Pima Counties.

References:

Kearney & Peebles, Arizona Flora
Rickett, Wild Flowers of the U. S., Vol. IV
Royal Horticultural Society Dictionary of Gardening

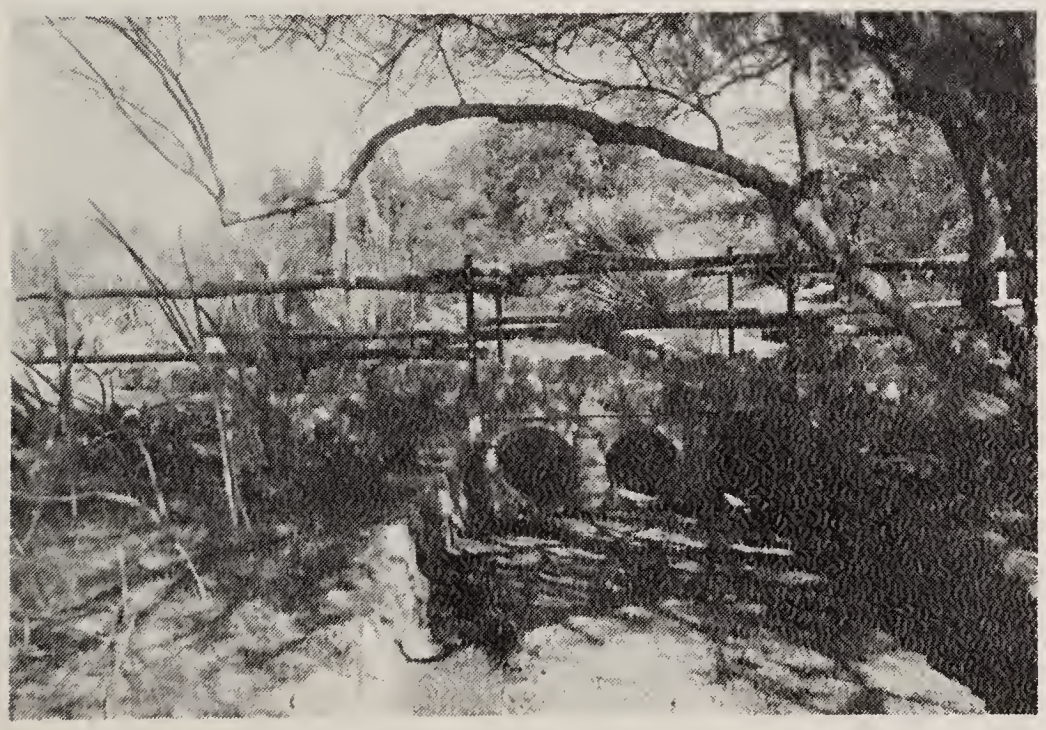
—LD

GARDEN CONSTRUCTION



The Phoenix Bonsai Society created this Japanese-style rest area, using only desert plants. It was dedicated on April 18th in memory of Paul Matsusaki, landscape artist and bonsai enthusiast.

From the Hiram Pratt Ramada you can look across the Auditorium and Library to Barnes Butte on the west and Camelback Mountain on the north. Eastward is a panoramic view of Four Peaks, over forty miles away.



One of the three new bridges built last year. They are made of desert stone and heavy concrete culverts so as to stand up under the rare but heavy flow of water through the desert wash we call our "Little Colorado".

TOMATILLO, SQUAW-BERRY

Lycium berlandieri Dunal.

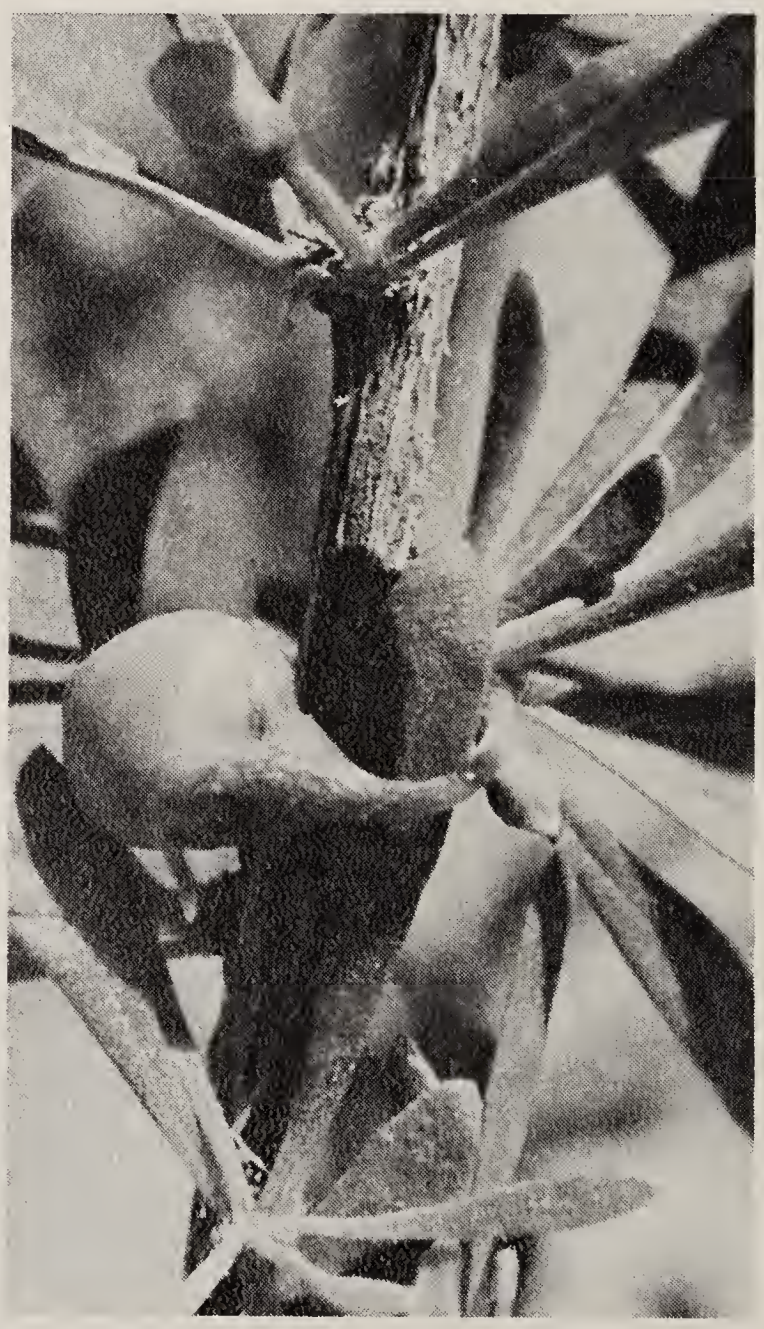
Solanaceae

Potato Family

Lycium berlandieri in form is a medium to large spreading shrub, not becoming arborescent. It ranges in height from 0.6 to 2.5 meters (approx. 2 to 8 ft.) with straight or curved slender branches with spine-tipped laterals. Foliage is dense and drought-deciduous. Leaves are fascicled, numbering two to five in a close bundle. These are linear spatulate with entire margins and measure 5 to 30 mm. in length and 1 to 2.5 mm. in width. Leaf surfaces are without pubescence or slightly scaly. Flowering is from March to September, commencing in spring and occurring again after summer rains. Flowers are solitary and arise from the axil of one of the clustered leaves. The pale lavender corolla has a 4 to 8 mm. long funnel-form tube that is greatly flared at the top. Lobes are hairless or sparsely ciliate, short (1 mm. long), spreading but not reflexed. Calyx is bell-shaped, irregularly toothed and only 1 to 2 mm. long. Calyx tube is hairless or nearly so. There are four or five exserted stamens. Fruit is an orange-red, plump, juicy berry, 4 to 4.5 mm. in diameter. It is nearly spheroidal in shape and not constricted as are the fruits of many species of Lycium. Seeds are yellowish, 1.5 to 2 mm. long and number several to many (8 to 30).

Berlandier's Squaw-berry has an extensive distribution extending from southwestern United States south and eastward into Mexico. Ranging from western Texas through New Mexico into Arizona, it is found at elevations between 2,000 and 3,000 ft. (610 to 915 meters). In Arizona it grows on rocky foothills, in washes, and on dry slopes of the desert and desert grassland in Maricopa, Pinal, Pima, Greenlee, and Yuma counties.

Lycium berlandieri can be propagated with fresh seed which requires no pretreatment. It is also easily grown from soft and hard wood cuttings. This species thrives equally well in full sun or partial shade and very often in the field the plant is found growing under the canopy of a large tree. While squaw-berries are very drought resistant, they also respond to



Tomatillo ("little tomato") growing from leaf axis of *L. berlandieri*.

frequent waterings, if planted in well-drained soils, and will grow into large, full, dense shrubs. The flowers are small, but at times are present in a great profusion. In a desert garden, as a landscape subject, **Lycium berlandieri** not only would serve as an ornamental shrub, but would have value in providing cover for birds and small animals, and the edible berries are an attractant for many song birds.

REFERENCES:

Benson & Darrow, The Trees and Shrubs of the Southwestern Deserts.

Hitchcock, Charles L., A Monographic Study of the Genus Lycium of the Western Hemisphere.

Kearney & Peebles, Arizona Flora.

Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.

—JHW

(Photos by Lyle McGill)

EDITOR'S NOTES

(Continued from page 63)

Last summer our staff completed three stone bridges bordered with rustic railings, and have been busy bordering our paths with black basalt rocks. This project may be completed during the coming summer. We are fortunate that the Herberger Enterprises gave the Garden permission to remove the rocks from a desert hillside eighteen miles away from here.

The Richter Memorial Library has certainly been full of activity since its dedication in April 1970. Each day sees many people working there, researchers and students using its facilities.

A library fund established last year was increased by generous memorial gifts and enabled us to purchase a good number of new (and often expensive) reference books for the Library. Many others have been ordered, but delivery on such specialized books is slow. It is a decided pleasure to work in this library where hard-to-find books are easily accessible.

Last but not least are our volunteers who aid in the operation of the Garden by acting as librarians and salespeople, by assembling and mailing the Bulletin, by compiling information, making educational displays and by doing many other jobs that arise at the Garden. And of couse we are grateful for all those volunteers who helped make the last Cactus Show a success.

MEMO

from: Barbara Worbington
to: Garden Members

Going away for the summer? Please let us know your forwarding address so the Bulletin can follow you!

HERBERT W. BOOL

We note with sorrow the passing of Herbert W. Bool on April 26th.

Many years ago he came to Arizona as a last resort for his health. The climate, and the loving care of Angela, his wife, kept him going beyond all expectations.

The Bools went into the business of growing and packaging small cactus, but a few years ago they sold the package enterprise, retaining and developing their trade in specimen plants.

Herb became a member of our Garden in 1936, and was a Board Member in the late 1940's. Angela is still the faithful secretary of our Executive Board.

Many are the services and plants which Herb has contributed to the Garden, and many of the latter remain as a living monument to a member who will never be forgotten.

Unassuming and always friendly, he retained his sense of humor to the last, and if he is remembered as a valued Garden member, he will be even more remembered as a friend.

—CM

FINANCIAL REPORT

(Continued from page 66)

ANTICIPATED BUDGET 1971—1972	
Bookstore Sales	$ 75,795
Wholesale Seeds	778
Wholesale Books	4,816
Contributions	561
Voluntary Admissions	15,859
Memberships	7,070
Endowment	18,900
	$123,779
Purchases for Bookstore Sales	$ 39,380
General Operating	9,640
Bldg. & Improvements	3,587
Fleet Operation	1,540
Utilities	3,335
Insurance	5,390
Sales Tax	2,750
Gross Wages	41,400
	$107,022

The following groups met at the GARDEN:

6	High Schools	157
24	Elementary Schools	5,308
12	Boy Scout Troops	246
15	Girl Scout Troops	276
11	Conventions	584
11	Garden Clubs	216
2	Church Groups	55
6	Board Meetings	63
9	Cactomaniacs	369
8	Flower Preservation Classes	33
15	Desert Plant Classes	222
10	University Classes	324
1	Annual Cactus Show	9,289
2	Bonsai Shows	2,162
16	Bonsai Meetings	480
24	Lectures	330
1	Members' Meeting	12
3	Officials from U.S. Gardens	3
17	Private Schools	612
8	College Classes	192
11	Day Schools (Nursery)	261
4	Camp Fire Girls Groups	43
3	Officials from foreign Gdns.	3
2	"Crash Programs"	41
2	T.V. Publicity Interviews at the Garden by Channels Three and Ten	

Lectures were given to the following groups away from the Garden.

1	Garden Group	26
6	Field Trips	150
2	Conventions	26
8	Nature Trips	202
5	Civic Groups	112
1	University	39

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXV Aug.-Sept., 1971 No. 7

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXV | Aug.-Sept., 1971 | No. 7

Arizona Cactus and Native Flora Society

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Table of Contents

Editor's Notes 75
Palmer Penstemon, *Penstemon palmeri* 76
Pringle's Indian-Mallow, *Abutilon pringlei* 77
Aspects of the Desert 79
Golden Rainbow, *Echinocereus dasyacanthus* 80
Prickly Pear Jelly and Other Treats 81
Goat's Beard Cactus, *Cephalocereus palmeri* 82
Our Herbarium 83

COVER: *Cephalocereus palmeri*

Desert Botanical Garden of Arizona

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Maintenance and Bookstore ..... Donald C. Shelstad
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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

Building activities have kept most of the staff out of doors during this unusually hot summer. Because it stood where our new Herbarium Building will be, we had to move our workship and storage building. First we put in cement foundations for it adjacent to the west side of the Archer House, then called in a housemoving concern to transfer it to the new location. After bolting it down we then poured cement floors. Another good thing about the move—we were able to weed out a lot of the bits and pieces that accumulate in any storeroom and contribute them to the city dump.

Our Planning Board, Don Hutton, Bob May, and Geraldine Eliot, are creating a new overall plan for the Garden. In about three years we will build a permanent shop and storage building in a Spanish-American style, and the current metal shop building will be superseded by a covered parking area using the same concrete flooring. Drawings have already been made by our architect Les Mahoney who is supervising the construction of our Herbarium Building, which should be completed by October.

Other summer work included the installation in July of a 1250-gallon septic tank for the Administration Building and the adjacent apartments. This replacement for the old 200-gallon tank was long overdue.

As these notes are being written, the staff is about to begin work on the Administration Building's roof. A new roof of urethane foam, installed over the existing roof, should provide good insulation and lower the summertime temperature in the Auditorium. We hope eventually to install air conditioning in the Auditorium for the comfort of our increasing numbers of summer visitors as well as our members.

GARDEN ACTIVITIES

First call for signing up for Janet Alsever's classes in flower preservation next spring. The classes were so popular that she's going to repeat them, and those of you who missed out last spring will be well advised to get your name in soon. The Alsever method of drying flowers with a special sand results in perfect long-lasting blossoms that always look freshly picked. For more information, call the Garden at 947-2800.

Here's a preview of the September and October activities. The card listing all 1971-72 activities will accompany your October Bulletin.

SEPTEMBER

Tues. 28th, Phoenix Bonsai Society Meeting, 7:30 p.m.

OCTOBER

Tues. 5th, Cactomaniacs' potluck supper, 6:30 p.m.

Fri. 29th, Phoenix Bonsai Society October Seminar, 7:30 p.m.

Sat. and Sun., 30th and 31st, Phoenix Bonsai Society Fall Show, from 9 a.m. to 5 p.m.

Arizona Wildflower

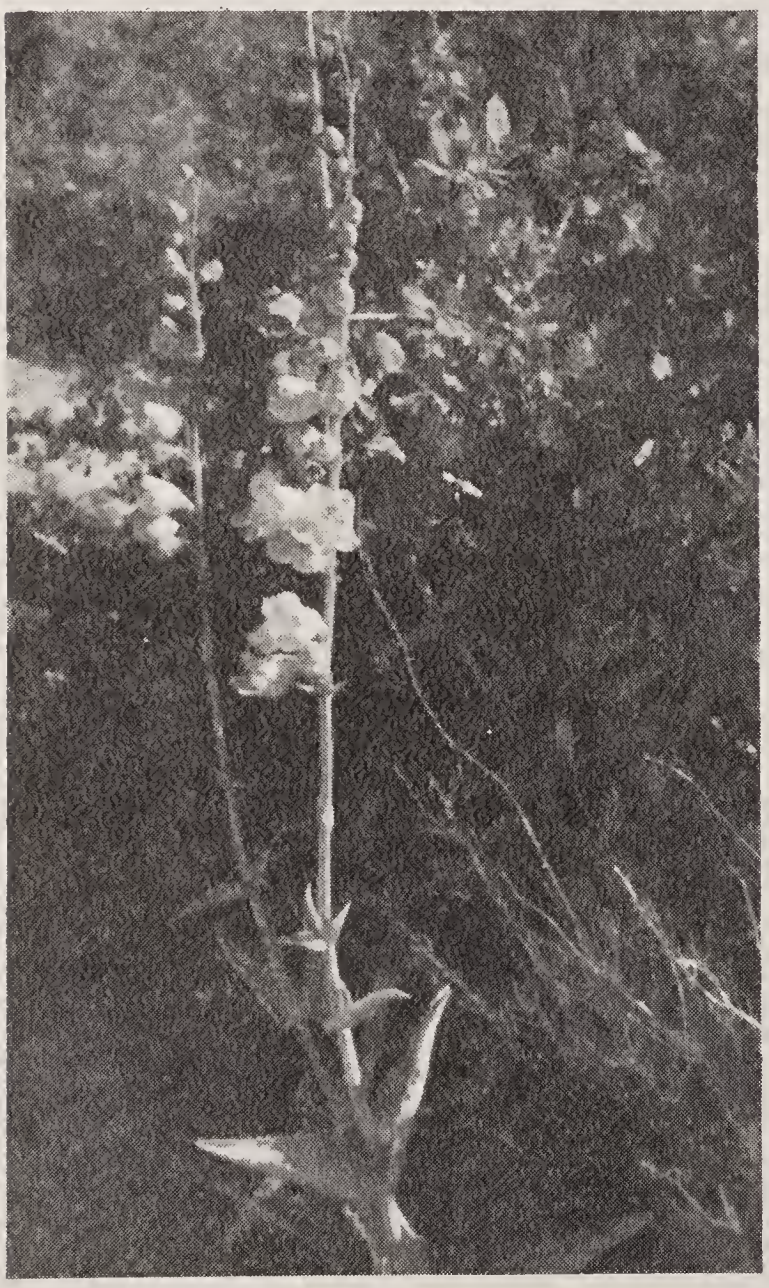
PALMER PENSTEMON
Penstemon palmeri

Scrophulariaceae
Figwort Family

Last Memorial Day weekend we drove up to Skull Valley, west of Prescott, for a picnic and a last look for spring wildflowers. Without knowing it, we had timed the trip perfectly. **Penstemon palmeri** was thick, and at the height of its bloom, on the rocky hillsides and roadsides where the road climbed eastward out of the valley. Even a dry cheese sandwich would taste good when eaten in the presence of scores of five-foot-high pink penstemons, and our average-delicatessen-picnic fare tasted gourmet.

Palmer Penstemon is the handsomest of the thirty-eight penstemons in Arizona, and if that weren't enough to recommend it, it is also one of the very few fragrant penstemons. Although various books give its height as one to three feet, we have seen it growing much taller. In the shelter of trees on Mingus Mountain (Yavapai County), it is frequently as tall as five feet ten inches, and in full sun along the road nearby it is a "mere" three feet six inches.

Somehow this penstemon gives a plump and prosperous impression—fat flesh-pink



Left: *P. palmeri* just coming into bloom. Above: Flower close-up. Note the distinctive inflated corolla and the shaggy "tongue" or staminode.

flowers, smooth, plump silvery-green leaves and stems, all in a generous profusion.

But this is no accurate way to identify a wildflower. If you want to be sure that the flower you see is Palmer Penstemon, look for these characteristics: A perennial plant with opposite leaves. The leaves are conspicuously toothed, and both leaves and stems are glaucous. The large, abruptly inflated corolla is strongly two-liipped and has prominent colored lines extending into the throat from the lower lip. A distinctive feature is the sterile staminode, or "tongue", very shaggy with golden hairs, which is attached to the upper side of the corolla at the junction of the tube and throat and arches downward and forward. This is truly a "beard-tongue".

P. palmeri is found from Utah and Arizona to California. In Arizona it grows at 3500-6500 ft. in Coconino, Mohave and Yavapai counties, most frequently in washes and along roadside in sagebrush and pinyon-juniper regions. Blossoming season is March-September.

REFERENCES

Kearney & Peebles, Arizona Flora
Muntz, California Desert Wildflowers
Rickett, Wild Flowers of the United States, Vol. 4.

—LD

Desert Trees and Shrubs

PRINGLE'S INDIAN-MALLOW

Abutilon pringlei Hochr.

Malvaceae
Mallow Family

Abutilon pringlei is an erect, perennial shrub up to two meters in height. The stems are woody some distance above the base, with ascending branches and slender branchlets. There is a velvety covering of wool-like matted hairs on the stems. The herbage also is finely pubescent with minute stellate hairs, appearing pale yellowish-green above and ashy beneath. With an alternate position on the twigs, the leaves are narrowly ovate to lanceolate, with cordate bases. Leaf apex is acute to short-acuminate and the margins are toothed. Being as much as twice as long as wide, the leaf measures to 5 cm. long and 8 to 25 mm. wide. Flowering commences in March and may extend throughout the summer until October.The flowers are axillary on the slender lateral branches. Petals are pale to deep orange with a deep maroon spot at the base. They are also striped with salmon along the veins. Petals are 4 to 6 mm. long and the flower diameter is 10 to 15 mm. Calyx lobes are round-deltoid and cover just the base of the much longer mature carpels. The carpels are 4 or 5 in number, 5 to 6 mm. high, and rounded or obtuse at the apex, being slightly narrower there than at the base.

Indian-Mallow's orange and maroon flowers are colorful but quite small.

A. pringlei fruit, showing both the 4-carpel and the 5-carpel forms.

There is a stellate puberulence covering the fruit. The very small, 1.6 to 2 mm. long, puberulent seeds are dull and dark brown. These are subglobose to reniform in shape.

This species of Indian-mallow is found at elevations ranging from 2,000 to 4,000 ft. (610 to 1220 meters) in the Lower Sonoran and lower part of the Upper Sonoran Zones. It grows scattered among rocks, at the base of cliffs, in arroyos, on dry hillsides, and in the open desert. Distribution is limited to central and southern Arizona and northern Sonora, Mexico. In Arizona it extends from Yavapai County, in west-central Arizona, south and east into Maricopa, Pinal, Pima, Graham, and Greenlee counties. Type is from the Tucson Mountains a few miles west of Tucson, Arizona.

Abutilon pringlei produces great numbers of seed during a season and collection of it must be made soon after the carpels ripen and before dehiscence occurs. Pretreatment of the seed is not required for germination. Propagation can also be achieved by use of tip cuttings. Growth rate under natural conditions is quite slow, but under cultivation it responds well to occasional supplemental waterings. Cultural requirements are a well-drained soil and full sun or partial shade. The plant is both cold hardy and drought hardy.

As an ornamental in the desert garden, **Abutilon pringlei** would have limited appeal. While it has bright flowers, they occur sparingly over a long period of time, and are so small as to require close attention to be seen. It would be of interest to persons desiring rarer plants for their desert landscapes, or for possible use as a bonsai subject.

REFERENCES:

Kearney & Peebles, Arizona Flora.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.

—JHW

This Indian-Mallow, photographed in the Garden, is about 4 feet tall.

ASPECTS OF THE DESERT

186-mile-long Lake Powell, on the Colorado River, merits all the superlatives used to describe it since it was formed in 1964 behind Glen Canyon Dam. Its 1960 miles of shoreline include many hidden canyons with perpendicular walls of glowing red sandstone.

Arizona Cactus

GOLDEN RAINBOW
Echinocereus dasyacanthus
Cactaceae

Since the publication of "Cacti of the Southwest" in 1963, some plants collected in southern and southeastern Arizona along the Mexican border, assumed to be **Echinocereus rigidissimus** (which bears large magenta flowers), have flowered and borne large yellow flowers. This indicated that the plants should be identified as **Ecer. dasyacanthus**, and examination of the spines, which are somewhat shorter and more numerous than the aforementioned species, confirmed the identification. So it seems that there is another legitimate plant for Arizona.

Ecer. dasyacanthus was described by Dr. Engelmann in 1848 and later accumulated about six synonyms. Dr. Lyman Benson (Cacti of Arizona, Revised 3rd Edition, 1969) now refers to it as **Ecer. pectinatus** var. **dasyacanthus**, which is a good name, as the plant has beautiful pectinate (comb-shaped) spine clusters.

This simple four to eight inch tall cactus is a solitary plant, with no offsets. It is found in grasslands and open deserts, often on apparently bare rocks, at elevations from four to five thousand feet, in the southeastern corner of Arizona, eastward to western Texas and southward to the Mexican states of Chihuahua and Coahuila.

This easy-to-grow Golden Hedgehog is one of the many native Texas plants that are gathered by the bushel and shipped to cactus growers and dealers who pack boxes of assorted cacti for shipping through the mails. Unfortunately, many of these boxes are shipped during the winter, and many plants arrive at their destinations frozen.

Ecer. dasyacanthus will grow in desert gardens in full sun. They should be watered once a month in warm weather and not at all during the cold months. Before planting, cut off old roots about one-half inch from the base of the plant, allow calluses to form before putting in the ground, and water sparingly until the strong new roots form.

TYPE LOCALITY: El Paso, Texas and southeast Arizona.

DISTRIBUTION: Arizona to Texas, south into northern Mexico.

REFERENCES:

Benson, Cacti of Arizona
Earle, Cacti of the Southwest

—WHE

This yellow-flowered "Rainbow" has great appeal for desert gardeners because it is quite easy to grow.

PRICKLY PEAR JELLY AND OTHER TREATS

Don't wait too much longer to make prickly pear jelly. A mixture of ripe and not-so-ripe fruit makes the jelling-est jelly, and if the jelly doesn't jell, what are you going to do with all those empty jelly jars and that paraffin?

There would be a lot more prickly pear jelly made, but many people don't know what it tastes like, and even more are afraid that the job of picking the fruits will result in hands stabbed and scarred with spines and glochids.

What does it taste like? Sorry, we can't describe the taste exactly, but it's awfully nice and not a bit strange. Some plants yield tastier juice than others, but any prickly pear jelly is better than "boughten" grape jelly, and much too good to use in peanut butter and jelly sandwiches.

And how do you pick the fruit? (All right, carefully!) Just use kitchen tongs. You don't even need to wear gloves.

Last spring we interviewed Gennie Remington, who makes the best prickly pear jelly we've ever eaten. Mrs. Remington is the marvelous cook who feeds the dozens of entomologists, botanists, geologists and zoologists who spend their summers working at the Southwest Research Station of the American Museum of Natural History, located near Portal, Arizona, in the Chiricahua Mountains.

Following are her recipes, not only for prickly pear jelly but for fresh prickly pear juice, bottled juice, syrup and sherbet.

FRESH PRICKLY PEAR JUICE

Wash ripe fruit under a strong jet of water in the sink. Put a few fruit at a time in a blender container with a little water. Blend, then strain through a coarse sieve first and then through a fine sieve, to remove seeds and spines. Combine with lemon juice, water and sugar to taste, to make a beautiful deep-pink "cactus-ade".

PRICKLY PEAR JELLY

Preliminaries: Pick some semi-ripe fruit as well as fully-ripe ones. If the fruit is juicy, one quart of fruit will equal about 2½ cups of juice. Either dump your basketful of fruit into the kitchen sink and spray-wash well, or dump it on a piece of screening in the back yard and hose it down thoroughly with the garden hose.

Remove the fruit with your kitchen tongs to a big kettle and slice through the fruit with a knife. There should be enough water clinging to the washed fruit, but you may add a little water if it seems necessary.

Simmer the kettle of fruit for a half-hour or longer until the juice starts to run, stirring occasionally. Then mash the fruit with a potato masher. Keep on cooking until you can mash all the fruit. It is important to cook slowly, no matter what other recipes say.

Pour fruit into jelly bag suspended over a bowl, and let drip overnight. In the morning pour off the clear juice, being careful not to pour out any of the dregs.

At this point you can put the juice into sterilized jars and freeze for later use. (We like this idea of Mrs. Remington's. It removes some of the panic of jellymaking, and if you make enough juice at this stage, you will also have the makings of the syrup and sherbet whose recipes follow.)

PRICKLY PEAR JELLY RECIPE

2½ cups of cooked juice, 1 pkg. of powdered pectin (never use liquid pectin). Combine and stir constantly over high heat and bring to a fast boil. Add 3 tbsp. of lemon or lime juice, and 3½ cups of sugar. Return to heat and bring to a hard boil, boiling for three minutes. The timing is important if you don't want rubbery jelly.

Pour into seven or eight medium jelly glasses and seal with paraffin.

PRICKLY PEAR SYRUP

Follow jelly recipe above, but use only ½

(Continued on page 84)

Mexican Cactus

GOAT'S BEARD CACTUS
Cephalocereus palmeri

Cactaceae

Simply as a potted cutting, this cactus attracts attention. As a full-sized, branched plant, with its glossy white wool that resembles a goat's beard, it is even more impressive. There are many strange cacti, but this one with white-tipped branches is outstanding.

Cephalocereus palmeri is a native of eastern Mexico—Ciudad Victoria, Tamaulipas, and south along the coast to Jalapa, Vera Cruz in the warm, moist valleys.

In 1909 Rose named it **Cephalocereus palmeri.** Vaupel called it **Cereus victoriensis** in 1913. Knuth, in 1935, preferred **Pilocereus palmeri.** Then in 1955, Byles and Rowley erected the genus Pilosocereus for these plants bearing wool at the top of their branches.

Cephalocereus palmeri will grow to about eighteen feet, with a central column and several ascending branches glaucous to bluish-green in color. The stems have seven or eight prominent ribs with large areoles bearing many white woolly hairs, one-half to two and a half inches long, matted to the point of obscuring the flowering side of the stem.

The flowers, white to pink, are nocturnal and close when the sun's direct rays reach them. The round, red, wrinkled fruit, two and a half inches wide, turns black and is practically hidden in the woolly hairs. The edible pulp of the fruit is a beautiful royal purple, containing many black seeds. In cultivation of the plant, fruit production is easy. Hand-pollination of the flowers brings a good crop of fruit.

C. palmeri prefers warm, moist areas and partial shade. It is susceptible to frost, and should be given protection from cold. The best means of fast propagation is by means of eighteen-inch to twenty-four-inch cuttings, since seedlings grow very slowly for the first five years.

TYPE LOCATION: Near Victoria, Mexico.

DISTRIBUTION: Victoria to Vera Cruz.

REFERENCES:

Backeberg, Die Cactaceae
Borg, Cacti
Bravo, Las Cactaceas de Mexico
Britton & Rose, Cactaceae

—WHE

Both flower (above) and fruit (below) appear in the heavily-matted wool of *Cephalocereus palmeri.*

OUR HERBARIUM

by J. Harry Lehr, Curator of the Herbarium

During the past year the pages of this Bulletin have contained occasional references to the herbarium, and the most recent issues have also discussed the proposed new herbarium building. Yet, to many of our members, these references were of only passing interest, for the relationship of a herbarium to a botanical garden is not generally know.

The most simple explanation of this relationship would be to consider the grounds of our Botanical Garden as a "library of living plants" while the herbarium is a "library of pressed, dried and identified plants." These two libraries, with the addition of the "book library," are the essential tools with which a modern botanical garden conducts its various research studies.

The role of the herbarium in these studies is more easily understood when you realize that it would be impractical, and impossible, to maintain alive and growing, at one institution, all of the plants, for example, which characterize the flora of the Southwest. Yet the Desert Botanical Garden is a service institution, and the staff of the Garden is called upon daily to answer questions about and to identify plants.

A recent example of this occurred when members of the staff were asked to identify a collection of plants from Echo Canyon in Camelback Mountain. The results of this inquiry were influential in the decision of the City of Phoenix to rezone the area to prevent further real estate development.

Last week a request came from an entomologist for herbarium data on a certain genus of plants that a particular butterfly feeds on.

It is important, therefore, that the herbarium contain a complete representation of the plants growing naturally within the parent institution's area of major interest—in this case, the Southwest and other deserts. In addition, as the herbarium grows in its total number of specimens, there will also be a corresponding increase in its use by research students from other institutions. At present our entire Lupine collection is on loan to a botanist who is preparing a revision of the genus, and in the near future our Astragalus or Loco-Weed specimens will be lent for the same purpose.

The terms "pressed and dried" as related to the herbarium specimens are quite different from grandmother's visit to a distant relative, her fancy for some wildflower found there, and her subsequent pressing of it in some large album. Rather, the serious collector must have knowledge of correct collecting procedures. First, it is important that the specimen be pressed as soon as possible after collection. For this purpose, the collector carries a press which consists of two lattice wood frames 18 by 12 inches, with the space between the horizontal and vertical strips about two inches square. Folded newspapers are carried between these two frames, and the freshly collected specimens are placed between these folds. Pressure is then obtained by leather or canvas straps drawn tightly about the press frames. When choosing a specimen for collection, it is imperative that it consist of portions with flowers or fruits attached, for classification and identification is based chiefly upon the structure of the flowers or the fruit. Whenever possible, the entire plant is collected, but frequently the size of the press limits the amount that can be accommodated within it. In these instances, at least portions of the root are collected, because this part of the plant is often a factor in its determination. When placing the plant in the press, leaves must be flattened and the whole specimen spread, trimmed, or its foliage adjusted to show the

kind of inflorescence, its attachment to the stem, the number of sepals, petals, stamens and pistil. The experienced collector always carries a field notebook, and at the time of collection makes entries pertaining to the environment in which the collection was made. After a period of drying in the press (about two weeks) the specimens are mounted on a large specialized herbarium sheet of heavy paper with a standard herbarium fixative or with small strips of adhesive linen. When identification is made, a formalized, printed white label is attached to the sheet. The label contains the scientific name of the plant, the name of the collector, the exact locality where the plant was found, the date of its collection, and any other pertinent data which might add to our knowledge of this plant or others related to it. The herbarium sheet is filed in a folder with others of the same family, genus or species. These folders with their included sheets are permanently stored in standardized metal herbarium cases with insect-proof doors. The herbarium also contains an accession file in which a record is kept of every sheet in the cases. Frequently, reference to this file eliminates the necessity of thumbing through the stored sheets.

At the time of my appointment about a year ago, our herbarium was a dormant entity. It consisted of a total collection of about 2250 specimens stored in three herbarium cases. In addition, a large wooden case contained part of a valuable Mexican collection made by George B. Hinton in 1932-33-34-35. Stored in every other available space were about fifty cardboard cartons containing material contributed to the Garden during the past twenty years, most of it unmounted and part of it also lacking identification. Therefore, activity in the herbarium during this past year has been concentrated first on professionally organizing the sheets in the herbarium cases, and then on analyzing and assessing the value of the material stored in the cartons. This phase of activity has been almost completed, and as a result, a good many sheets have been added to our total collection. In addition, the members of our staff have also been active collectors and their specimens have added to our total which, at present, is over 4300 sheets. This has necessitated the purchase of three more herbarium cases. It is a small beginning, but with the addition of Dr. Howard S. Gentry to our staff we will be favored with the deposition in our herbarium of his personal collection of many thousands of specimens.

The reactivation of our herbarium has generated a spirit of enthusiasm among the staff and the future should see our "library of pressed, dried, and identified plants" equal in quality and quantity to our "library of living plants" and our "library of books."

Prickly Pear Jelly and Other Treats

(Continued from page 81)

pkg. of powdered pectin. Or blend one cup of water with one quart of jelly. This is superb on pancakes.

PRICKLY PEAR SHERBET

3½ cups of unsweetened cooked juice, one can of sweetened condensed milk, a bit of lemon juice. Mix and freeze as per standard refrigerator ice cream recipe.

We wish you success in your prickly pear cooking, and the Garden's staff (though without "the management's" sanction) will graciously sample any of your culinary successes, any old time at all.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

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REG MANNING

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

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Table of Contents

Editor's Notes 87
Smoke Tree, *Dalea spinosa*.....88
New Park in New Mexico.....90
Aspects of the Desert.....91
Book Review 92
Robust Claret Cup, *Echinocereus gonacanthus*.....93
False Garlic, *Nothoscordum texanum*.....94
Bisnaga, *Echinocactus grandis*.....95
Garden Activities 96

Cover: False Garlic

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Editor's Notes

(Your Editor and Mrs. Earle are on a six-week trip to Australia and New Zealand via Tokyo, Singapore and other fascinating places. They will be in West Australia for the spring wildflowers, and will show pictures of them at the November Cactomaniacs meeting.

This month's Notes, therefore, are really "Staff's Notes", not "Editor's".)

Our librarian, Eleanor Radke, tells us that the entire Richter Collection is now classified and catalogued, and her volunteer assistants are completing the same work on our other books. When this is done, the two collections will be combined and shelved according to the Dewey decimal system of library classification, and researchers using the library will find it much easier to locate the particular books they need.

In the past year the number of university students using our library has at least tripled. This pleases us, because an unused library would be little more than a roomful of handsome bindings. We have started to discuss with the Arizona State University library the possibility of their making a duplicate set of our catalogue cards. That way, graduate and undergraduate students in the field of botany at ASU can find what material is located here at the Garden. None of our books can be taken from our library, but, as always, researchers are welcome to use the books here.

A week or so ago, station KPHO-TV came to the Garden to film a segment for a series of educational programs for children. John Weber located an expendable barrel cactus for the show, and proceeded to decapitate and excavate the barrel in search of the "sweet drinking water" a lot of people believe in. When he gave the film crew slices of the barrel cactus flesh to chew, you should have seen their faces. "Sourest expressions known to man", says John. They should have filmed their own faces. The myth about fresh water from a barrel cactus would have ended right there.

Barbara Worbington reports that, although Garden attendance has dropped during the summer as usual, phone calls have increased. The commonest questions (after "What hours are you open?") are: "What is in flower now?", "How do you transplant saguaro—or joshua trees—or ocotillos?", and "What books have you for sale about the desert?"

By now Barbara has learned the answers to the usual questions, but sometimes she's stumped. This, for instance: "Do you have crazy cactus?" Everyone else was stumped, too. Maybe the answer should have been that all our cactus are sane.

There's a saying that you're a native Arizonan if you've seen it rain twice. A lady who visited the Garden recently, with an out-of-state friend in tow, must have been that kind of native. She pointed to the cholla cactus logs that are for sale at the Visitors' Building, and said in ringing tones, "That is saguaro wood that the woodpeckers pecked holes in." Ann Shelstad was too polite—or too stunned—to

(Continued on page 92)

Desert Trees and Shrubs

SMOKE TREE
Dalea spinosa Gray

Leguminosae
Pea Family

Dalea spinosa, often called Smoke Tree, grows into a small and compact tree or a large shrub, 2 to 6 meters (6.6 to 20 ft.) high. The gray or silvery branches are stiff and ascending from a short trunk. Glands and appressed hairs cover the branches and spine-tipped twigs. Bark of the trunk is dark gray-brown in contrast to the silvery branches. Heartwood of the trunk is dark brown, and the wood is light in weight compared to that of most desert trees. Most of the year the tree is leafless, the leaves becoming deciduous soon after emergence. These are few in number, simple, oblanceolate, and 1 to 2.5 cm. long. The leaves and floral parts are glandular, as are the stems and twigs. Flowering commences in April and extends to June. The flowers are five to ten in a cluster and have short pedicels. They are typically pea-flower shaped, with dark purple corollas, and measure 9 to 13 mm. long. Calyx is glandular and pubescent. Fruit is a beaked, glandular, ovate pod to 10 mm. in length. It contains one or two seeds and does not split open. Seed is yellowish-white to light brown with irregular purple dots and streaks. It measures to 4 mm. in length, 3 mm. wide, and 2 mm. thick. The hilum and micropyle are located near one end below a raised truncated protuberance.

Dalea spinosa has an elevational range from near sea level to occasionally 460 meters (about 1,500 ft.). In the Lower Sonoran Zone it is found in sandy and rocky washes or canyon bottoms in areas generally free from hard freezes. This species ranges from southwestern Arizona

The branches of the Smoke Tree, leafless for most of the year, are silvery-gray. Each twig ends in a sharp spine.

This Smoke Tree was photographed 18 miles east of Yuma, Arizona, at the base of the Gila Mountains. Elevation there is about 600 feet.

into southeastern California and northwestern Mexico. In Arizona it extends from western Pima and Maricopa counties into Yuma and southwestern Mohave counties.

Dark purple pea-shaped flowers contrast with the smoky-gray of branches.

Propagation of the Smoke Tree requires pretreatment of the seed to overcome an impervious seed coat. Scarification or soaking overnight in hot water is generally sufficient to allow germination to take place. Cultural requirements are full sun exposure and rocky or, preferably, deep sandy-silt soils. It has not been successfully grown for any length of time at the Desert Botanical Garden and at only one location within the environs of Phoenix is it known to be growing as a mature plant in cultivation.

Smoke Tree is so called because, at a distance, it looks like a puff of gray smoke. This species would be a welcome addition as an ornamental in the desert garden if it were not for its narrow limits of tolerance to soil and temperature.

REFERENCES:

Benson and Darrow, The Trees and Shrubs of the Sonoran Deserts.
Kearney and Peebles, Arizona Flora.
Little, E. L., Southwestern Trees.

—JHW

NEW PARK IN NEW MEXICO

On June 12, Gov. Bruce King dedicated the New Mexico Zoological - Botanical State Park of the Southwest at Carlsbad, N.M. Our Garden acted as consultant in the planning. The Charles Mieg collection of cacti and other desert plants was the largest individual purchase for the 360 - acre park. Handsome buildings and ramadas, educational exhibits of plants and wildlife, and numerous nature trails all contribute to make

this new state park outstanding. As plantings mature and the second phase of development is completed, it will draw many more visitors to SE New Mexico. Right now, with over 1,000 different desert and semi - desert plants to be seen, it is already attracting a healthy flow of desert plant enthusiasts. Best of luck to the new park!

ASPECTS OF THE DESERT

Most of Arizona's desert is Sonoran, but this small area of northwest Arizona is the eastern edge of California's Mohave Desert, which has markedly different vegetation. Here near Sitgreaves Pass and close to the Colorado River are Joshua trees, bursage, many shrubs, but few cacti.

Book Review

CACTUS COOK BOOK (subtitle, Succulent Cookery International), compiled by Joyce L. Tate, published by Cactus and Succulent Society of America, 1971. 128 pp. $1.95. (If ordering from Desert Botanical Garden, add $0.15 for postage.)

Whether you ever intend to cook cactus or not, this book is great fun to read. It is what it says, a compilation, a ragbag of odds and ends that are practical, incredible, dubious, enlightening and even amusing. What's your reaction to an African ethno-botanist's scrupulously detailed report on a prickly pear wine that ends "Very popular, despite the fact that a condition of chronic inflammation may be caused by spines lodging in the oesophagus"?

There are wonderfully odd things here from Africa and India, as well as from Mexico and the Southwest, and some recipes I, at least, want to try. French-fried echinopsis, for instance. Anybody who has grown this easter-lily cactus knows how rapidly it multiplies, so there's not much loss to your cactus garden if you try the recipe. But I think I'd hesitate before I dug up **Peniocereus greggi** (Queen of the Night cereus) just to make fritters from the tubers.

I want to try barrel cactus buds, too. The recipe says that they can be boiled or fried, and they taste like artichokes.

I'm not going to use the recipe for a Margarita cocktail—old tequila tipplers know that you don't put Triple Sec in a Margarita—but there are other tempting beverages in the book, and they won't hurt your oesophagus, either.

Some of the best-sounding recipes are prickly-pear-fruit sauces, desserts, ices, conserves, and a few nice-sounding cakes, although one has so much cinnamon, nutmeg, molasses, etc. added that the prickly-pear flavor must be lost.

A good few recipes sound like "what in the world to do with all this prickly pear that's been hanging around for ages, so I'll just throw a handful into everything". One brave but foolish creation was an attempt to "cactize" a heavy Polish meat stew that includes 3 lbs. of sauerkraut, about 2 lbs. of smoked meats (including Polish sausage), apples, onions, carrots, spices—**and** a half-cup of diced prickly pear pads! Since the pads, or nopalitos, taste like boiled cucumber at best, well, "button, button, who's got the nopalitos?"

This will never be a bride's kitchen bible, but it does make an entertaining gift for a cactophile, a live-off-the-lander, a courageous cook, or a friend back East who thinks we're slightly mad to live in the Southwest.

(By the way, there are seventeen recipes here for prickly pear jelly, none of them as good as the one you found in last month's Saguaroland Bulletin. If this is boasting, make the most of it.)

—LD

EDITOR'S NOTES

(Continued from page 87)

say anything. So another un-fact has gone into circulation, we guess.

The Royal Horticultural Society Dictionary of Gardening fills four big volumes and, it says, "aims at describing every plant suitable for cultivation in the British Isles." We were surprised to find so many of our Arizona wildflowers fit that category. Excluding cacti, we counted two dozen Arizona natives in a skim-through of the volumes. Nowhere near that many are in cultivation here in the United States. Arizona has some striking native plants, and it's easy to see their appeal, but we do wonder where and why an English gardener would plant a mesquite or Mormon tea. Many desert dwellers love the smell of creosote bush after a rain, but we don't think it terribly attractive otherwise. Still, it is interesting to think of a creosote bush growing in the British Isles.

ROBUST CLARET CUP
Echinocereus gonacanthus
Cactaceae

This early-flowering hedgehog cactus is a good addition to any collection. Its bright red flowers, twisted ribs and stout spines are quite an attraction.

E. gonacanthus was first found by Bigelow and described by Engelmann in 1856 as **Cereus gonacanthus**. He later assigned it to the genus Echinocereus in 1885.

The Robust Claret Cup is found in the open at 5500-6500 ft. elevation, on rocky hillsides adjacent to forests of pinyon-pine and juniper, east of St. Johns, Arizona and into southern Colorado, western and northern New Mexico. It occupies a range north and northwest of **E. triglochidiatus** and is found to intergrade with the latter.

E. gonacanthus is single to cespitose, forming easily-transplantable clumps that measure up to fifteen inches in diameter. A great number of them are now planted at the New Mexico Botanical and Zoological Garden in Carlsbad, where they grow in full sun. The elevation there is 3100 ft. Here at the Desert Botanical Garden, elevation 1200 ft., we must grow the plants in the shade.

The clumps of this species are rather open, not mounded or compacted as in the more common **E. triglochidiatus** var. **melanacanthus**, another Claret Cup Hedgehog. The blackish-green stems are two to eight inches tall and two to three inches in diameter, with about eight tubercled ribs each bearing one or two 1½″ long, angled, dark gray central spines. These are surrounded by five to eight gray radial spines. The spines emerge from the elongated areoles.

Fruit are globose, green with a pink blush when ripe, and have a slightly acrid taste. The seeds are black. The scarlet flowers are cup-shaped, hence the common name of Claret Cup.

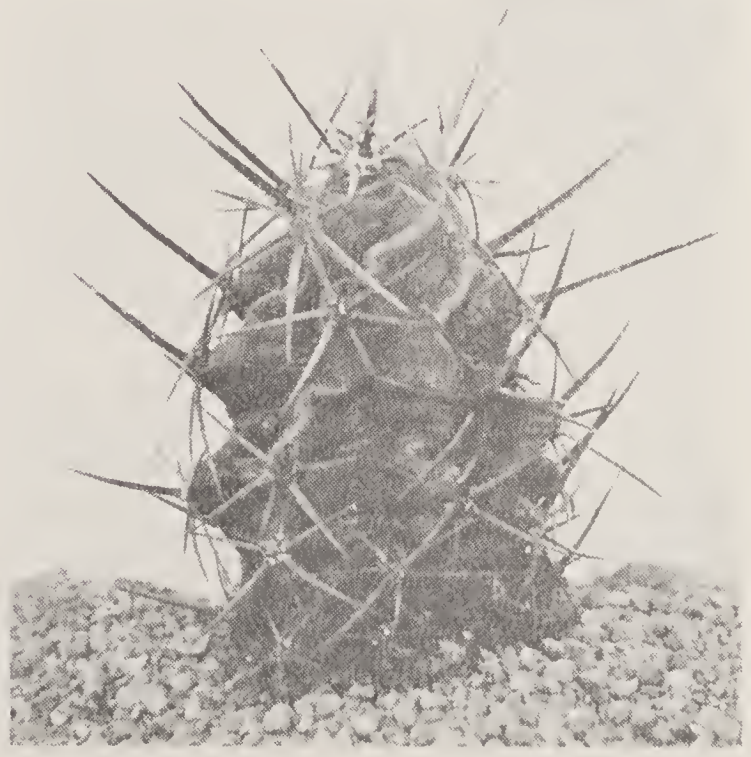
Type Locality: West of Zuni, N. M.

Distribution: East side of Apache County, Arizona, into western and northern New Mexico and southern Colorado

References:

Benson, Cacti of Arizona, Revised 3rd Edition
Earle, Cacti of the Southwest

—WHE



Robust is an appropriate name for this sturdy, well-armed cactus.

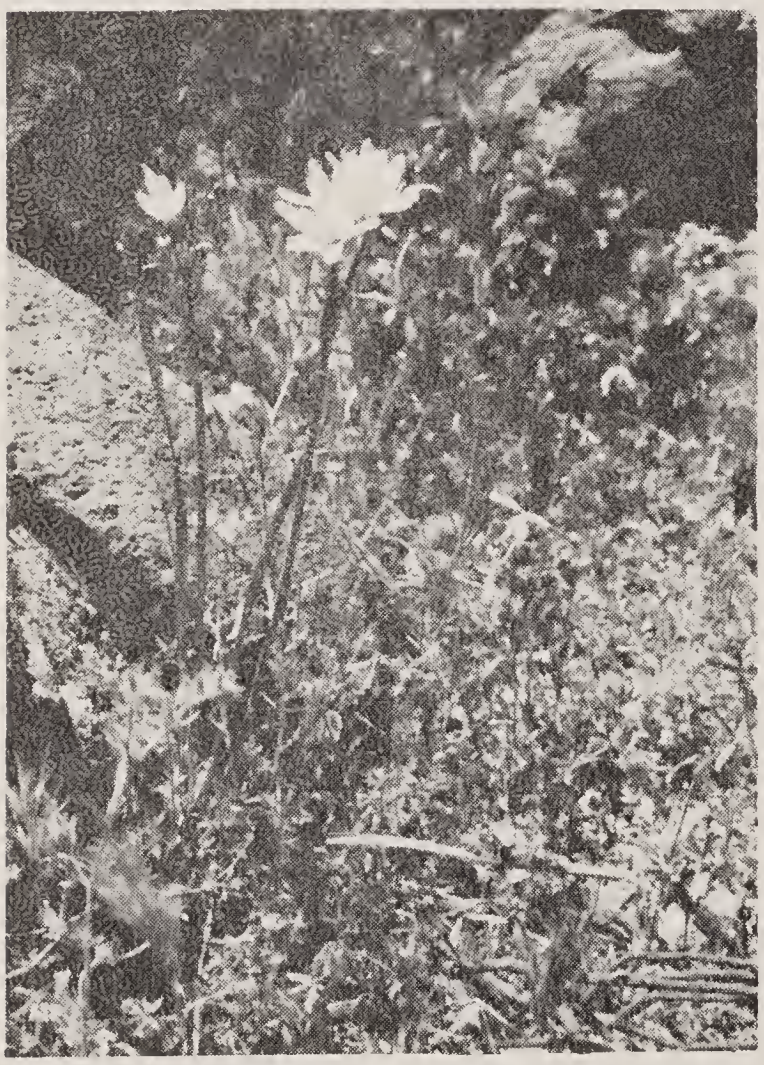
Arizona Wildflower

FALSE GARLIC
Nothoscordum texanum

Liliaceae
Lily Family

It's a pity there isn't a nicer name for this flower. The only one we have in English is a literal translation of Nothoscordum, False Garlic, which is misleading, because, even though it is a close botanical relative of garlic, neither the leaves nor the bulb has any garlicky smell, and the flowers are pleasantly fragrant.

N. texanum isn't a common wildflower, but it isn't rare either. Its pattern of distribution is spotty, that's all. Which may explain why it wasn't until 1930 that this eye-catcher was described by M. E. Jones. We saw a number of the plants in bloom last May in the Chiricahua Mtns., some ten miles from Portal, Arizona, at about 5500 ft. elevation—the same area, incidentally, where Jones found his type specimen. It is also relatively abundant near Sunflower, which is in NE Maricopa County, near the Gila County line. The accompanying pictures were taken at Sunflower. Specimens of **N. texanum** in our herbarium come from Sunflower, Payson (near Sunflower), Cochise County (where the Chiricahuas are), and Sunset Point in Yavapai County, 48 miles north of Phoenix.



N. texanum a foot tall, photographed about a mile north of Sunflower, Ariz.

This is a graceful plant, six to twelve inches tall, with long, narrow basal leaves. The cluster of flowers, pale yellowish-white, is tinged with purple on the undersides of the petals, or (more accurately) the perianth segments. In False Garlic these perianth segments are joined at the base. In true Garlic (Allium) they are not.

False Garlic is found growing in the open on hillsides and plains in shallow, hard, gravelly soil, at 4000-6000 ft. elevations. It blooms in April and May, in Gila, Pinal, Cochise, Santa Cruz and Pima Counties of Arizona, and spills over county lines at least into NE Maricopa County as mentioned above.

Type Locality: Cochise County, Arizona, near Rodeo, New Mexico.

Distribution: West Texas and southern Arizona, probably also in southwest New Mexico and northern Mexico.

References:

Bailey, Standard Cyclopedia of Horticulture
Correll & Johnson, Manual of the Vascular Plants of Texas
Kearney & Peebles, Arizona Flora

—LD

Mexican Cactus

BISNAGA
Echinocactus grandis
Cactaceae

The three cacti known as "bisnaga", **Echinocactus grandis**, **E. ingens** and **E. visnaga** look very much alike in their early years, but in later years **E. grandis** becomes more than twice as tall as the others, and it will outlive them by many years.

The ranges of these bisnagas overlap, so it is not uncommon to see more than one species of these immense barrels in a small area, heavy cylinders 3½' high and 3½' in diameter, with symmetrical ribs and spines.

The older plants of **E. grandis** can attain a height of eight feet and a weight of many hundreds of pounds. Because of the great weight, "sags" or "spare tires" develop around the girth of the plant at irregular intervals.

Bisnagas grow in calcareous soils at 3500-4000 ft. elevation where there is good drainage, very little rainfall and a dry winter. They are very conspicuous plants in the area from Tehuacan eastward to the city of Puebla.

Young plants of **E. grandis** have a decided purple tinge or patches of purple, which disappear when the plants develop from the early globular shape to the maturing cylindrical shape. The purple patches suggested the name "zebra cactus" which is used in the nursery trade.

A mature **E. grandis** has 30-40 ribs, and areoles bearing strong yellow spines that later turn to brown. A heavy wool covers the apex of the plant, and out of this wool appear many shiny yellow flowers that are 2½-3" wide. These are followed by the 2" to 3" long elongated fruits, covered with long wool, and containing brown seeds. The fruit remains on the plant for many years.

These plants grow fairly fast from seed. They should have shade while young, but they can take the heat and sun later on. They are able to withstand front down to 20 degrees F for short periods.

Type locality: West of Tehuacan, state of Puebla, Mexico.

Distribution: State of Puebla, Mexico.

References:
Borg, Cacti
Bravo, Las Cactaceas de Mexico
Britton & Rose, Cactaceae

—WHE

Barrel cacti may not be palatable to humans, but this Bisnaga was well eaten by goats. Photographed near Cadereyta, Queretaro, Mexico.

A mature Bisnaga, well over six feet tall, with many "sags" caused by its great weight. This plant was photographed by Hans Krainz near Tehuacan, Puebla, Mexico. Dry, hilly terrain is typical habitat for this cactus.

GARDEN ACTIVITIES

OCTOBER

Tues.	5th	CACTOMANIACS — Potluck supper	6:30 P.M.
Fri.	29th	PHOENIX BONSAI SOCIETY — October Seminar	7:30-9 P.M.
Sat. 30th thru Sun. 31st		PHOENIX BONSAI SOCIETY FALL SHOW	9-5 P.M.

NOVEMBER

Tues.	2nd	CACTOMANICS — Australian Wildflowers W. H. Earle, Director, Desert Botanical Garden	8:00 P.M.
Wed.	3rd	CLASSES — Desert Plants	3 & 8 P.M.
Thurs.	4th	LECTURE — Arizona Cacti in Flower	3:00 P.M.
Wed.	10th	CLASSES — Succulent Plants	3 & 8 P.M.
Thurs.	11th	LECTURE — Arizona Wildflowers in Flower	3:00 P.M.
Wed.	17th	CLASSES — Culture of Succulent Plants	3 & 8 P.M.
Thurs.	18th	LECTURE — Arizona Trees in Flower	3:00 P.M.
Tues.	23rd	PHOENIX BONSAI SOCIETY — Studies in Bonsai Roots and Group Planting (slides)	7:30 P.M.
Wed.	24th	CLASSES — Desert Trees and Shrubs	3 & 8 P.M.
Thurs.	25th	LECTURE — Arizona Birds and Animals	3:00 P.M.
Sat.	27th	PHOENIX BONSAI SOCIETY — Field Trip to Sedona	

1971-72 Program of Activities
Desert Botanical Garden
IN PAPAGO PARK, PHOENIX, ARIZONA

(Enter at 5800 E. Van Buren or 6400 E. McDowell)

GARDEN is open daily 9 A.M. to 5 P.M. including weekends and holidays.

ILLUSTRATED LECTURES are given each Thursday at 3 P.M.

CLASSES in identification, propagation and use of desert plants are given each Wednesday at 3 and 8 P.M.

CLASSES in preservation of flowers will be given by Janet Alsever in April and May. (Limited enrollment, early registration essential).

SEPTEMBER

Tues.	**28th**	PHOENIX BONSAI SOCIETY — Trees of Bonsai Clubs in Africa, California and Atlanta. (slides)	**7:30 P.M.**

OCTOBER

Tues.	**5th**	CACTOMANIACS — Potluck supper	**6:30 P.M.**
Fri.	**29th**	PHOENIX BONSAI SOCIETY — October Seminar	**7:30-9 P.M.**
Sat. 30th thru Sun. 31st		PHOENIX BONSAI SOCIETY FALL SHOW	**9-5 P.M.**

NOVEMBER

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Wed.	**10th**	CLASSES — Succulent Plants	**3 & 8 P.M.**
Thurs.	**11th**	LECTURE — Arizona Wildflowers in Flower	**3:00 P.M.**
Wed.	**17th**	CLASSES — Culture of Succulent Plants	**3 & 8 P.M.**
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Tues.	**23rd**	PHOENIX BONSAI SOCIETY — Studies in Bonsai Roots and Group Planting (slides)	**7:30 P.M.**
Wed.	**24th**	CLASSES — Desert Trees and Shrubs	**3 & 8 P.M.**
Thurs.	**25th**	LECTURE — Arizona Birds and Animals	**3:00 P.M.**
Sat.	**27th**	PHOENIX BONSAI SOCIETY — Field Trip to Sedona	

DECEMBER

Wed.	**1st**	CLASSES — Cultivation of Trees and Shrubs	**3 & 8 P.M.**
Thurs.	**2nd**	LECTURE — Arizona Scenics	**3:00 P.M.**
Tues.	**7th**	CACTOMANIACS — Christmas Meeting (Members' Photos)	**8:00 P.M.**
Wed.	**8th**	CLASS (afternoon) FIELD TRIP — Sugar Loaf Mountain	**8:30 A.M.**
Thurs.	**9th**	LECTURE — Collecting in Mexico	**3:00 P.M.**
Sat.	**11th**	CLASS (evening) FIELD TRIP — Sugar Loaf Mountain	**8:30 A.M.**
Thurs.	**16th**	LECTURE — Arizona Cacti	**3:00 P.M.**
Thurs.	**23rd**	LECTURE — Arizona Wildflowers	**3:00 P.M.**
Tues.	**28th**	PHOENIX BONSAI SOCIETY — Aged, Imported and Domestic Bonsai (slides)	**7:30 P.M.**
Thurs.	**30th**	LECTURE — Arizona Trees and Shrubs	**3:00 P.M.**

JANUARY

Tues.	**4th**	CACTOMANIACS — "Hydroponic Growing through Hydroculture", R. J. Galliva, Hydroculture, Inc.	**8:00 P.M.**
Wed.	**5th**	CLASSES — Desert Plants	**3 & 8 P.M.**
Thurs.	**6th**	LECTURE — Arizona Birds	**3:00 P.M.**
Wed.	**12th**	CLASSES — Succulent Plants	**3 & 8 P.M.**
Thurs.	**13th**	LECTURE — Arizona Scenics	**3:00 P.M.**
Wed.	**19th**	CLASSES — Culture of Succulent Plants	**3 & 8 P.M.**
Thurs.	**20th**	LECTURE — Collecting in Mexico	**3:00 P.M.**
Tues.	**25th**	PHOENIX BONSAI SOCIETY — How to do Rock Plantings (slides)	**7:30 P.M.**
Wed.	**26th**	CLASSES — Desert Trees and Shrubs	**3 & 8 P.M.**
Thurs.	**27th**	LECTURE — Arizona Cacti	**3:00 P.M.**

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10-71

1971-72 DESERT BOTANICAL GARDEN PROGRAM

FEBRUARY

Tues.	1st	CACTOMANIACS — "Arizona Native Plants Law", R. A. Countryman, Chief of Division of Compliance, Arizona Agriculture Commission	8:00 P.M.
Wed.	2nd	CLASSES — Cultivation of Trees and Shrubs	3 & 8 P.M.
Thurs.	3rd	LECTURE — Arizona Wildflowers	3:00 P.M.
Wed.	9th	CLASS (afternoon) FIELD TRIP — Pinnacle Peak	8:30 A.M.
Thurs.	10th	LECTURE — Arizona Trees	3:00 P.M.
Sat.	12th	CLASS (evening) FIELD TRIP — Pinacle Peak	8:30 A.M.
Wed.	16th	ART ENTRIES DUE FOR CACTUS SHOW	before 5:00 P.M.
Sat.	19th	ALL OTHER ENTRIES DUE FOR CACTUS SHOW	before 1:00 P.M.
Sun. 20th thru Sun. 27th		25th ANNUAL CACTUS SHOW	daily 9-5 P.M
Tues.	29th	PHOENIX BONSAI SOCIETY — Collecting Bonsai (slides)	7:30 P.M.

MARCH

Thurs.	2nd	LECTURE — Arizona Birds	3:00 P.M.
Tues.	7th	CACTOMANIACS — "Boyce Thompson Arboretum", R. T. McKittrick, Supt.	8:00 P.M.
Wed.	8th	CLASSES — Deserts and Their Plants	3 & 8 P.M.
Thurs.	9th	LECTURE — Arizona Scenics	3:00 P.M.
Sat.	11th	PHOENIX BONSAI SOCIETY — Field Trip Pinal Ranch	
Wed.	15th	CLASSES — Succulent Plants	3 & 8 P.M.
Thurs.	16th	LECTURE — Collecting in Mexico	3:00 P.M.
Wed.	22nd	CLASSES — Culture of Succulent Plants	3 & 8 P.M.
Thurs.	23rd	LECTURE — Arizona Cacti	3:00 P.M.
Mon.	27th	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	28th	PHOENIX BONSAI SOCIETY — How to Show Trees (slides)	7:30 P.M.
Wed.	29th	CLASSES — Desert Trees and Shrubs	3 & 8 P.M.
Thurs.	30th	LECTURE — Arizona Wildflowers	3:00 P.M.

APRIL

Mon.	3rd	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	4th	CACTOMANIACS — "Growing Problems", Lowell True, County Agricultural Agent	8:00 P.M.
Wed.	5th	CLASSES — Cultivation of Trees and Shrubs	3 & 8 P.M.
Thurs.	6th	LECTURE — Arizona Trees	3:00 P.M.
Wed.	12th	CLASS (afternoon) FIELD TRIP	8:30 A.M.
Thurs.	13th	LECTURE — Arizona Birds	3:00 P.M.
Sat.	15th	CLASS (evening) FIELD TRIP	8:30 A.M.
Thurs.	20th	LECTURE — Arizona Scenics	3:00 P.M.
Sat.-Sun. 22-23rd		BONSAI SOCIETY SPRING SHOW	9-5 P.M.
Mon.	24th	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	25th	PHOENIX BONSAI SOCIETY — Bonsai in Natural Settings (slides)	7:30 P.M.
Thurs.	27th	LECTURE — Collecting in Mexico	3:00 P.M.

MAY

Mon.	1st	CLASSES IN FLOWER PRESERVATION	1 & 7 P.M.
Tues.	2nd	CACTOMANIACS — Potluck Supper	6:30 P.M.
Tues.	23rd	PHOENIX BONSAI SOCIETY — Care of Bonsai in Summer (slides). Election of Officers	7:30 P.M.

No lectures or classes given from mid-May through October. The Garden is open daily all year long, including weekends and holidays.

The DESERT BOTANICAL GARDEN is a non-profit educational institution, and is supported solely by memberships, endowments and contributions.

MEMBERSHIP APPLICATIONS are available for you at the Book and Gift Shop in the VISITORS' RECEPTION BUILDING.

For additional information, telephone 947-2800.

(over)

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXV November, 1971 No. 9

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXV | November, 1971 | No. 9

Arizona Cactus and Native Flora Society

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Table of Contents

Editor's Notes 99
Mala Mujer, *Cnidoscolus angustidens* 100
Devil's Claw Barrel, *Sclerocactus whipplei* 101
Aspects of the Desert 103
Visit the Garden 104
Mexican Cactus, *Mammillaria balsasoides* 105
Cactomaniacs??? 106
Burro-weed, *Aplopappus acradenius* 107
Garden Activities 108

Cover: Mala Mujer

Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

It's gratifying how well my staff can turn the "Editor's Notes" into "Staff Notes" as they did in the last issue while Mrs. Earle and I were enjoying our trip through the Orient and the southwest Pacific and photographing wildflowers in West Australia.

It was strange to leave our hot desert in September and arrive in the Southern Hemisphere among spring flowers and trees just budding out. The wildflowers were such unusual plants — no similarity to our desert flowers. I have to admit the weather conditions were a bit rough while we were in West Australia, with cold winds off the Indian Ocean, rain, clouds that played havoc with the lighting for flower close-ups, but the same clouds lent themselves to tremendously effective landscape shots.

I was able to take over eight hundred slides, and they will go into our files for future lectures. I had the opportunity to be a consultant to botanical gardens in Japan, Perth, Melbourne, Sydney and Honolulu, and I visited more gardens in Hong Kong, Manila, Bangkok, Singapore, Christchurch, Auckland, Mount Cook, Fiji, Samoa and Kauai.

This was a trip that I had long dreamed of, and I do wish to thank all the members of the Garden for their work in keeping the Garden running without a hitch during my absence.

Bids on the new herbarium building were opened last month and the job was awarded to Dean Coffman Construction Co. who built the Library in 1968 and the Visitors' Building in 1960. Footings have been poured and the walls are going up now. Deadline for the finish of construction is January 28th, so we will be able to move our herbarium cases into their new home then. Our Advisory Board's Chairman, Les Mahoney, is again our architect. I know you will enjoy the beauty of this building which will be in the same southwestern style as our other buildings.

As the Garden grows, we have to increase our staff. Mrs. Lela Turner is now a saleswoman in our gift shop every other weekend. Mr. Rodney G. Engard, a graduate student at Arizona State University is working four afternoons a week with our Horticulturist, John Weber. He will also be able to work in our Visitors' Center on some weekends.

More volunteers are coming out to the Garden when we need their help. It was quite a sight to see the teamwork when Ruby and Paul Neumann, Eleanor and Carl Groschke, Peg Gill, Joy Lee Schroeder and our Barbara Worbington got the October Bulletin ready for mailing. They pasted in all the "Aspects of the Desert" cards, got the Bulletins into envelopes, sorted everything according to zip code and bundled the whole works, all in four hours. They had a good time, too. We'll be calling on others of our friends when need arises.

Dr. Howard Gentry who has been putting in some concentrated work on the herbarium since early September, has returned to Washington to help Mrs.

(Continued on Page 106)

Arizona Wildflower

MALA MUJER
Cnidoscolus angustidens

Euphorbiaceae
Spurge Family

Watch out for Mala Mujer, the "bad woman." Though "she" isn't a member of the nettle family, she'll give you a stinging nettle rash if you so much as brush by her.

C. angustidens is a rank-growing perennial, up to four feet tall, with large hand-shaped leaves on long petioles. The three to five lobes on each leaf are coarsely toothed. All of Mala Mujer's stems, leaves and flowers are covered with stiff, stinging hairs, each hair with a conspicuous round pustule at the base. These hairs are transparent and pustules are white.

The flowers of this plant are of two kinds, staminate and pistillate. The calyx of the staminate flower is papery and white. Calyx of the pistillate flower is white and petal-like, and it falls off soon after blossoming. There are no true petals.

Although the stinging hairs can cause painful and dangerous inflammation, the roots of Mala Mujer have been made into a tea for treatment of snakebite. (By the way, if any member of Women's Lib objects to the name we use here she may use a less prejudiced common name: Nettle Spurge.)

C. angustidens is a plant of the plains and hillsides of the Lower Sonoran Zone, found from Pima and Cochise counties of Arizona, south to Sonora, Baja California and Sinaloa in Mexico. Elevational range is 2500 to 5000 feet, and flowering time is May through July.

REFERENCES
Kearney & Peebles, Arizona Flora

Pesman, Meet Flora Mexicana

Rickett, Wild Flowers of the United States, Vol. IV

Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

—LD

Here (and on the cover) you can see the profusion of transparent stinging hairs on *C. angustidens. On the opposite page is a close-up of the staminate flowers, enlarged five times, showing that even the flowers aren't free from hairs.*

Arizona Cactus

DEVIL'S CLAW BARREL
Sclerocactus whipplei

Cactaceae

"Sclero" means "hard," and if you handle this miniature barrel you will agree that it is well named. The hooked spines are hard, cruel and obstinate. The lower hooked central spine holds onto your flesh and clothing with unpleasant efficiency.

This is a solitary plant, although if the apex is injured by livestock or deer stepping on it, it will put out a few offsets. It is sometimes found as tall as sixteen inches, but it is usually about eight inches tall, growing in open gravelly soil or between tufts of clustered grasses or under bushes.

For much of the year it is inconspicuous in the desert, but it attracts attention when it flowers, with its two-inch-wide and two-and-a-quarter-inch-long blossoms. Color is usually light purple, but it is sometimes pink or even white. Flowers cluster at the apex of the plant.

This barrel cactus is easily identified by its white upper central spines. They are flattened, un-hooked and two inches long. The radial spines are reddish, as are the lower centrals.

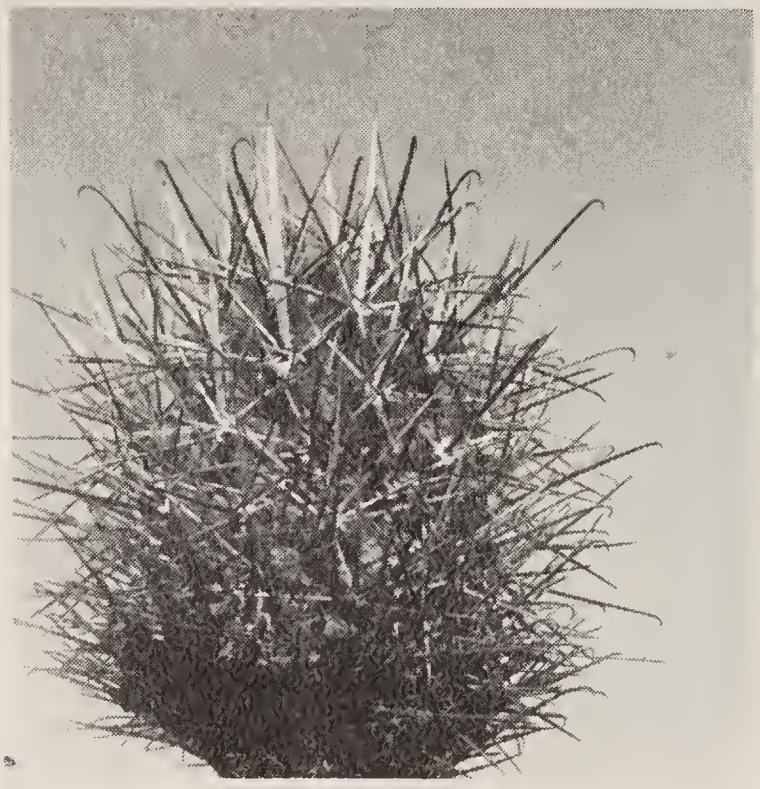
An interesting feature of the plant is that the ripe fruit are impossible to pick. As the fruit ripens it becomes a thin-walled dry berry, and when you lift it off the plant the top separates from the base and the seeds spill all over the plant, leaving you with an empty shell in your fingers. Some of the seeds can be retrieved with a pair of tweezers.

The seeds, which are eaten by birds, are comma-shaped, black and semi-glossy.

Devil's Claw Barrel is found along the northern boundary of Arizona in juniper-pine association. Although many jackrabbits hop among these Sclerocactus up north without paying them any attention, jackrabbits in our lower desert, oddly enough, are attracted to them as cats to catnip, with the result that our

plants here are eaten up unless protected by wire cages.

The population of S. **whipplei** in northern Arizona has been very badly afflicted by a blue "wireworm" that leaves the plants standing but dried out.



White upper central spines make *S. whipplei* easy to identify.

Engelmann and Bigelow described the plant in 1856 as **Echinocactus whipplei.** In 1922 Britton and Rose erected the genus Sclerocactus and placed **whipplei** in it. In 1969 Benson listed three varieties under **S. whipplei** and wrote that there may be even more than three varieties.

Type locality: West of Pipe Springs, Arizona.

Distribution: Juniper-pinyon belt, 3500-6500′, gravelly soil, mostly on the Colorado River drainage of northern Arizona eastern Utah and southwestern Colorado.

REFERENCES
Benson, The Cacti of Arizona
Britton & Rose, Cactaceae
Earle, Cacti of the Southwest

—WHE

CLASSES IN FLOWER PRESERVATION

Three classes in flower preservation will be taught by Janet Alsever at the Desert Botanical Garden next spring. Because of the popularity of last year's classes, we urge you to register as soon as possible.

Each class will consist of four two-hour sessions.

Dates of classes: March 27, April 3, April 17, April 24.

Time: Morning Class, 10 a.m., afternoon class, 1 p.m., evening class, 7 p.m.

Fees: For Garden Members, registration $6.00, manual and oolitic sand $7.25 plus tax. For non-members, an additional fee of $5.00, applicable to Garden membership or as a donation to the Garden.

For registration forms, telephone the Garden at 947-2800.

ASPECTS OF THE DESERT

For many people the word "desert" means only vast areas of sand dunes, though such terrain comprises only a very small part of the world's deserts. In southwest Arizona, near Yuma, we have our only area of sand dunes. The sands are multi-colored and dramatic and, on windy days, dangerous.

Two Beautiful Reasons to Visit the Garden

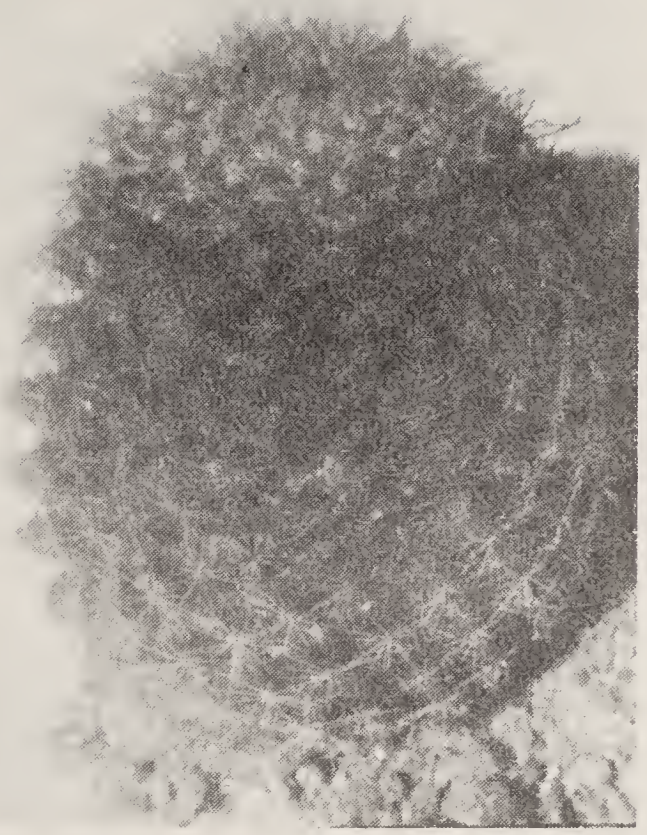
Mexican Cactus

Mammillaria balsasoides

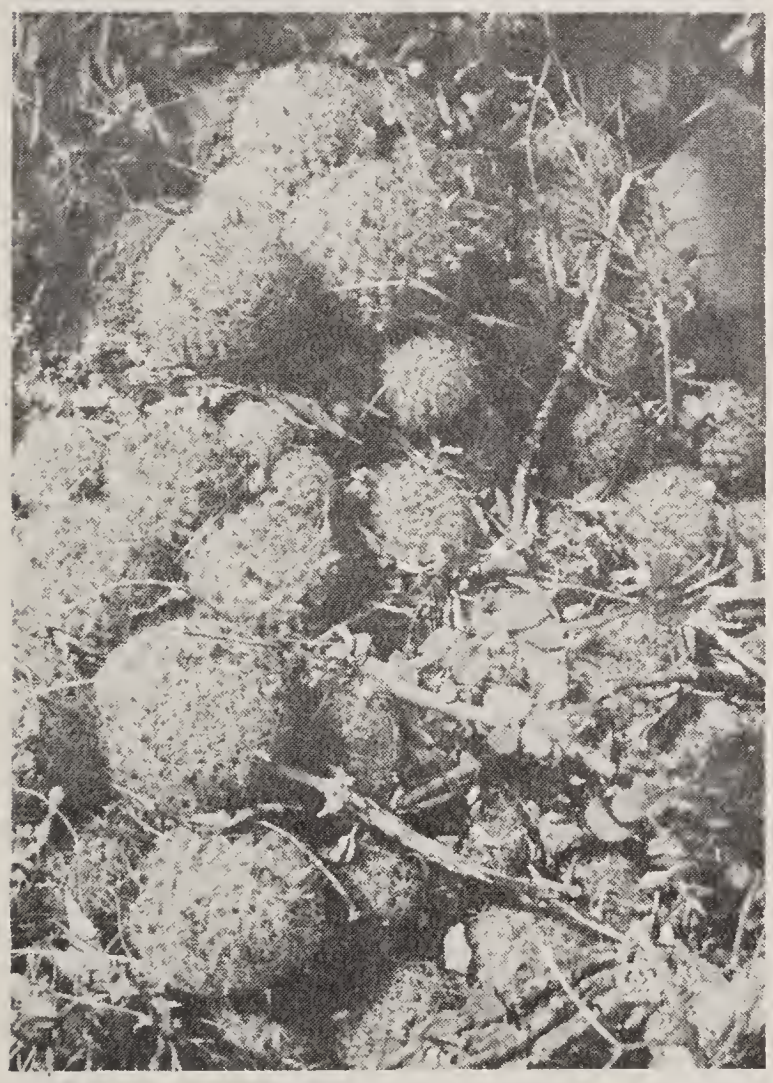
Cactaceae

Another attractive pincushion type that does will in cultivation with very little attention. For many years this plant was known in collections as a small simple plant, but in 1966 we found it growing in large clusters, proliferating from the base of the parent plant.

It was first collected June 11, 1942 by Dr. and Mrs. Robert T. Craig, and described by Dr. Craig. It was found growing under trees on the mountainside along the highway between Taxco and Acapulco in the state of Guerrero near the Balsas River, from which it was given its specific name.



A solitary plant. From Craig's "Mammillaria Handbook".



Cluster *M. balsaoides,* photographed 44 miles S of Tasco, Gro., Mexico

In 1931 Boedecker described **Mammillaria balsasensis** from about the same area, but in 1945 Craig relegated Boedecker's plant to synonymy under **M. beneckei**, leaving only one Balsa River mammillaria, the newly-described **M. balsasoides.**

The plant is two to two and a half inches wide, two and a half to four inches tall, and when clustered, about twenty inches in diameter. The soft body is gray-green, with eleven to eighteen spirals of rather blunt nipples. There are four central spines one half inch long, the lower spine straight and hooked only at the end, the upper three spines being porrect. Radial spines are ten or eleven, about a quarter of an inch long.

The rather unusual shade of yellow-orange in the flower is quite attractive. The short filaments are white and the anthers and stigma lobes are a deep

yellow. The colors darken as the flower ages over three or four days. The soft green fruit is deeply embedded between the tubercles. Seeds are black.

In 1964 Charles Mieg, one of our Board members, brought to the Garden several of these plants which he had collected on flat land about forty miles south of Taxco. On our 1966 trip we found that the same area had been put into corn. With misgivings, we continued our search for the rest of the afternoon and about five o'clock found clustered plants fifteen miles west of his discovery point, closer to the Balsas.

Type locality: Near Rio Balsas, Guerrero, Mexico.
Distribution: State of Guerrero.
Reference: Craig, Mammillaria Handbook.

—WHE

CACTOMANIACS??? What on earth—?

Are they really maniacs? And if so, what are they doing at our nice sane Desert Botanical Garden? What are they doing, anyway?

You've seen the Cactomaniacs mentioned in the Bulletin — in Editor's Notes, on schedules of meetings, on your annual activities card, but the Bulletin has never published an account of the exalted aims, overwhelming accomplishments and stringent membership requirements of the "secret society" called Cactomaniacs. The reason is, there aren't any.

Back in 1950 an informal group of Garden members got together informally and decided, "Let's meet every now and then without a lot of fuss, and talk about cactus and succulents that we grow, or photograph, or just look at. And let's have no nonsense about by-laws or rules or dues or officers or such stuff. Let's have fun and call ourselves Cactomaniacs."

So they did, and they're still meeting, and the only thing (sorry, person) resembling an officer is Charlie Mieg who is Chief Maniac simply because, he says, there isn't another idiot willing to do the job.

Meetings include news (not minutes), discussion, a speaker whose topic is of interest to cactus-minded people, and refreshments of a normal sort — no boiled saguaro arms. In fall and spring there's a potluck supper. Cactomaniacs are still as informal as they were in 1950, and they'd like Garden members in the Phoenix metropolitan area to know about their easy-going, interesting meetings. Why not drop in at eight p.m. on the first Tuesday of next month, or the month after, or whenever you like? You'll be very welcome. Let us know if you're coming so we can order enough cupcakes to go round. Phone us at the Garden. 947-2800.

EDITOR'S NOTES (Continued)

Gentry move their belongings west. They return here in late November to live in the Archer House, so Garden friends can make their acquaintance soon. Until the new herbarium building is completed, Dr. Gentry has turned one of the Archer House rooms into a temporary workshop and office, so he is really looking forward to herbarium-opening-day in January.

Last month's Bulletin contained a copy of our 1971-72 program of activities. Hang it up in a handy spot so you can be sure you don't miss any of the lectures, meeting and classes. We've had to drop the monthly nature trips that we so enjoyed, but my weekends are filled with collecting trips, consultation work, meetings and lectures.

Inserted in this month's Bulletin is our corrected Price List of books and other items sold in our GIFT SHOP. Use this for some of your Christmas Shopping — you purchases will help support the Garden. A Membership in the Garden would make a good Christmas gift to some of your friends who would remember you all of next year.

BURRO-WEED

Aplopappus acradenius
(Greene) Blake

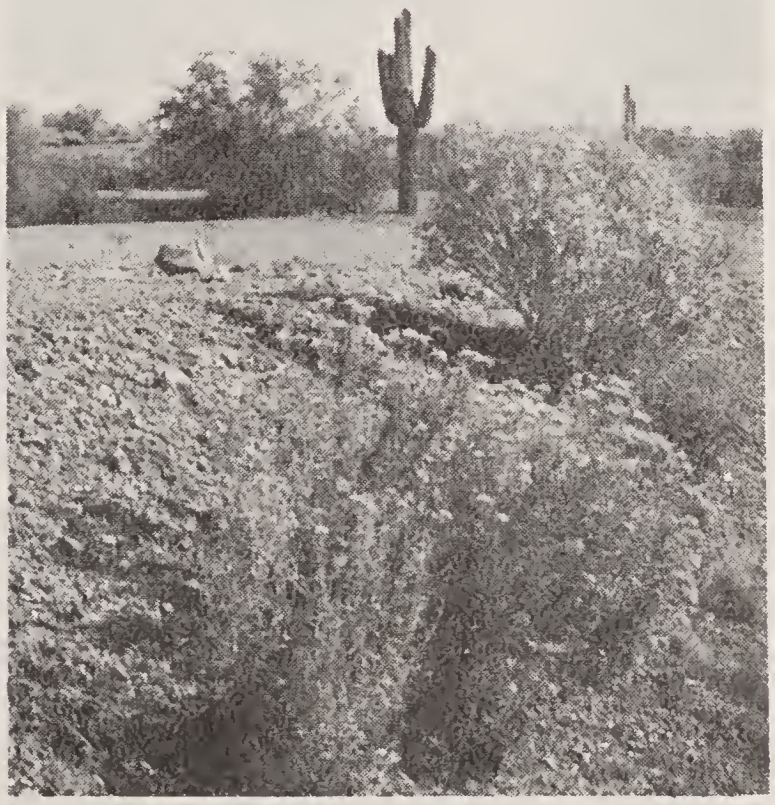
Compositae
Sunflower Family

Aplopappus acradenius is an erect, perennial shrub that is common in much of Arizona, particularly on saline soils. It attains a height of from 30 to 100 cm. (1 to 3.3 ft.). The bark on the older stems is white and shining, and the brittle herbage is striate and hairless, or covered with granules. Leaves are from 2 to 4.5 cm. long and 3 to 9 mm. broad. These are narrow, oblong to oblanceolate in shape, with entire or toothed margins and are sometimes lobed. Flowering occurs from June through October. The small, discoid, nearly sessile heads are lacking in ray flowers. There is a large, rounded, green, resin gland near the tip of each of the bracts subtending the flower head. These glands are conspicuous and wartlike. There are 6 to 13 corollas in a head, each measuring from 5 to 6 mm. in length. Corolla tube is dilated and the small lobes are ovate in shape. The corollas are either lacking in hairs or minutely hairy. Fruit is five-ribbed, dry, one-celled, and 3 to 4 mm. in length. The numberous pappus bristles are yellowish in color and equal the corollas in length.

Aplopappus acradenius has an extensive distribution in Arizona and extends into southern Utah, southern California, and northern Mexico. It is a species limited primarily to the Lower Sonoran Zone at elevations ranging from sea level to 2,000 ft. (610 meters) and in rare situations up to 4,000 ft. (1,220 meters). In Arizona it is found on desert plains and hillsides in Coconino, Mohave, Gila, Maricopa, Pinal, Pima, and Yuma counties.

Burro-weed is one of several species of

The bright-yellow flowers of Burro-Weed are less than a half-inch long.



Burro-weed bushes 2-ft. tall in foreground. Brittlebush behind and above.

Aplopappus that are often called by this common name. It produces a great quantity of seed each year and in areas having saline soils it is often quite abundant. A weedy type of plant, it is seldom browsed by wild or domestic animals. Some species of the genus contain tremetol, a toxic compound, which causes poisoning of livestock and which can be transmitted through milk to humans.

This plant is not known to be in cultivation and, having no obvious redeeming features, it is doubtful that it will be in the future. Not a good landscaping subject, still it is quite attractive when in flower and is often called by another common name, Golden-weed.

REFERENCES:
Benson and Darrow, The Trees and Shrubs of the Southwestern Deserts.
Kearney and Peebles, Arizona Flora.
Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert.

—JHW

Soft yellowish-white bristles of the fruiting heads of *A. acradenius*.

GARDEN ACTIVITIES

NOVEMBER

Tues.	**2nd**	CACTOMANICS — Australian Wildflowers W. H. Earle, Director, Desert Botanical Garden	**8:00 P.M.**
Wed.	**3rd**	CLASSES — Desert Plants	**3 & 8 P.M.**
Thurs.	**4th**	LECTURE — Arizona Cacti in Flower	**3:00 P.M.**
Wed.	**10th**	CLASSES — Succulent Plants	**3 & 8 P.M.**
Thurs.	**11th**	LECTURE — Arizona Wildflowers in Flower	**3:00 P.M.**
Wed.	**17th**	CLASSES — Culture of Succulent Plants	**3 & 8 P.M.**
Thurs.	**18th**	LECTURE — Arizona Trees in Flower	**3:00 P.M.**
Tues.	**23rd**	PHOENIX BONSAI SOCIETY — Studies in Bonsai Roots and Group Planting (slides)	**7:30 P.M.**
Wed.	**24th**	CLASSES — Desert Trees and Shrubs	**3 & 8 P.M.**
Thurs.	**25th**	LECTURE — Arizona Birds and Animals	**3:00 P.M.**
Sat.	**27th**	PHOENIX BONSAI SOCIETY — Field Trip to Sedona	

DECEMBER

Wed.	**1st**	CLASSES — Cultivation of Trees and Shrubs	**3 & 8 P.M.**
Thurs.	**2nd**	LECTURE — Arizona Scenics	**3:00 P.M.**
Tues.	**7th**	CACTOMANIACS — Christmas Meeting (Members' Photos)	**8:00 P.M.**
Wed.	**8th**	CLASS (afternoon) FIELD TRIP — Sugar Loaf Mountain	**8:30 A.M.**
Thurs.	**9th**	LECTURE — Collecting in Mexico	**3:00 P.M.**
Sat.	**11th**	CLASS (evening) FIELD TRIP — Sugar Loaf Mountain	**8:30 A.M.**
Thurs.	**16th**	LECTURE — Arizona Cacti	**3:00 P.M.**
Thurs.	**23rd**	LECTURE — Arizona Wildflowers	**3:00 P.M.**
Tues.	**28th**	PHOENIX BONSAI SOCIETY — Aged, Imported and Domestic Bonsai (slides)	**7:30 P.M.**
Thurs.	**30th**	LECTURE — Arizona Trees and Shrubs	**3:00 P.M.**

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXV December, 1971 No. 10

Season's Greetings

P.B.-MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXV | December, 1971 | No. 10

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Table of Contents

Editor's Notes 111
White-thorn Acacia, *Acacia constricta* 112
Strawberry Hedgehog, *Echinocereus boyce-thompsoni* 113
Aspects of the Desert 115
Wild Morning-glory, *Evolvulus arizonicus* 116
Dwarf Barrel, *Thelocactus lophothele* 117
The Yucca-feeding Giant Skippers of Arizona 118
Garden Activities 120

COVER: Our Christmas decorations: Ocotillo

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Editor's Notes

Feliz Navidad

y

Próspero Año Nuevo

to all the Garden's friends

from

the Executive Board

the Advisory Board

the Garden Staff

and

the Volunteers

WHITE-THORN ACACIA
Acacia constricta Benth
Leguminosae
Pea Family

Acacia constricta grows as a rounded, spreading shrub or low branching small tree attaining a height from 0.5 to 4 meters (1.7 to 13.3 ft.). Branches are upright or arcuate spreading and are armed with paired, slender, white spines at the nodes. These are awl-shaped, straight or slightly curved, and 0.5 to 2 cm. long. Some plants are without spines. The twigs are covered with very short hairs. Leaves are bipinnate, the primary divisions numbering 3 to 9 pair. These are alternate in position along the twigs or appearing to be clustered at the nodes. The 4 to 16 pair of leaflets are oblong to linear in shape and 1.5 to 3.5 mm. long and 0.7 to 1 mm. broad. Foliage is often viscid. Flowering begins in May and extends through August. Inflorescence is capitate, the globose heads are about 1 cm. in diameter and borne on 1 cm. long peduncles. All parts of the flower are bright-golden yellow. The petals are united into a 2 to 2.5 mm. long tube. Stamens are exserted and 30 to 40 in number. The flowers are very fragrant. Fruit is an elongate, flattened, dehiscent pod that is constricted between the seeds. It is light reddish-brown, smooth, and devoid of hairs, but is sometimes glandular. The non-woody legume is curved or straight, 6 to 12 cm. long, and 3 to 6 mm. wide. Seeds are smooth and mottled gray and black. They vary from ovoid to lens-shaped and are about 5 mm. in length and 2 mm. in width.

White-thorn acacia ranges in elevation from 760 to 1830 meters (2,500 to 6,000 ft.) in the Lower and Upper Sonoran Zones. Extending from the desert into the desert grassland, it is found in washes and on dry rocky plains, mesas, and hillsides. Soils are shallow, sandy or rocky, and often with a caliche substrate. Distribution extends

Slender and almost straight thorns of *A. constricta* come in pairs.

Scented yellow heads of White-thorn Acacia are less than a half-inch across.

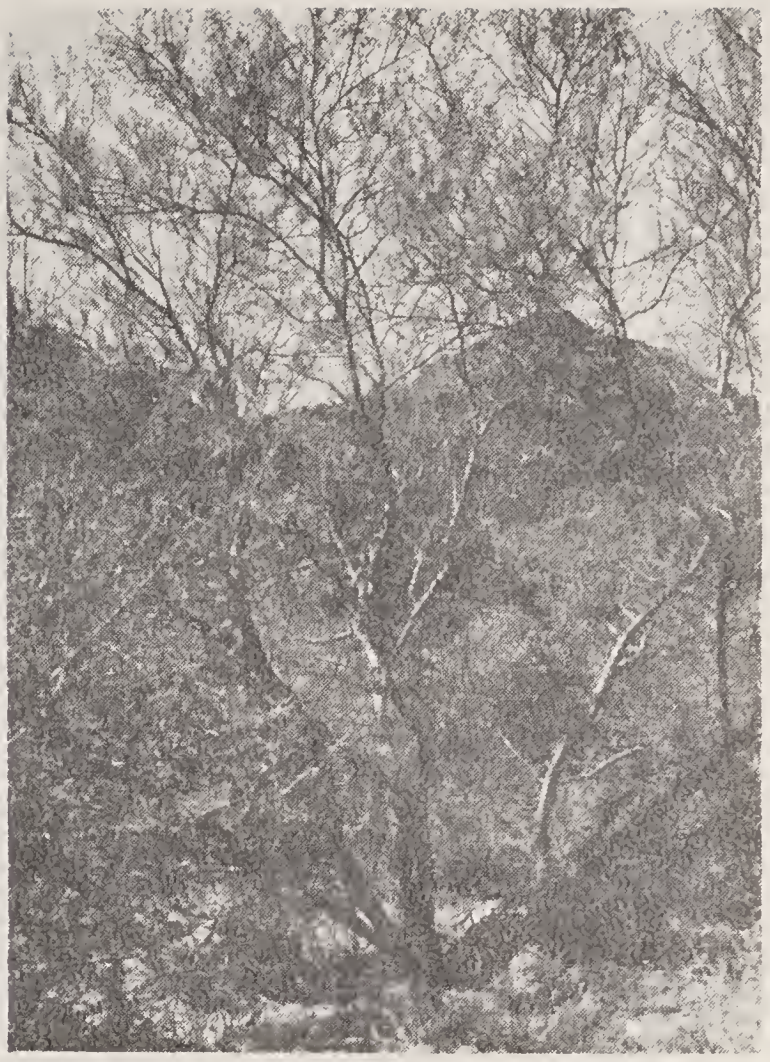
from southern Texas into southern New Mexico, northern and central Mexico, and west-central, central, and southeastern Arizona. In Arizona it is present in Yavapai, Maricopa, Yuma, Pima, Pinal, Gila, Graham, Greenlee, and Cochise counties.

Acacia constricta is propagated from seed which requires pretreatment to overcome an impervious seed coat. Scarification or soaking overnight in water that has been brought to the boiling point will achieve this end. Many seeds are infested with beetle larvae, but these infested seeds will float out when placed in water. Germination percentage is high and the viability is of long period. Growth rate is slow to moderate.

White-thorn acacia has not been used as an ornamental to any extent, since other species of acacias have larger inflorescences and prettier foliage. It does, however, make a handsome tree and is very hardy, requiring no care once it is established. As with most other acacias, this is an excellent honey plant and in areas where it is abundant it is important in this respect.

REFERENCES:

Benson & Darrow, The Trees and Shrubs of the Sonoran Desert.
Kearney & Peebles, Arizona Flora.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.



A. constricta photographed in the Little Horn Mtns. It is ten feet tall.

—JHW

Arizona Cactus

STRAWBERRY HEDGEHOG

Echinocereus boyce-thompsoni

Cactaceae

There are many "Strawberry Hedgehogs" in Arizona, such as **Echinocereus engelmanni**, **E. fendleri** and **E. boyce-thompsoni**, all known for their edible strawberry-like fruit, but the last is the largest of the three. It has four-inch central spines and makes a showy display of magenta to reddish-purple flowers in late April and early May.

This solitary to large-clustered plant has stems six to twelve inches tall. Central spines are a straw or reddish-tan color, growing at about right angles to the stem, and surrounded by eight to ten spreading radial spines of various lengths and colors.

Flowers are two and a half inches in diameter, with a sheen on the petals that can only be reproduced by color photography. Watercolors, oils and black-and-white photos do no justice to these fantastic flowers.

Long, light-colored spines and big flowers distinguish this Hedgehog.

Fruits are greenish at first but turn red when ripe and drop their spines, revealing a 1½ inch long berry similar to a large strawberry. Many black seeds are suspended in the tart-sweet and juicy white flesh of the fruit.

An interesting feature of these plants, which we have observed for years, is that as the plants become old they somehow "feel" their cycle has been about completed, so they bloom for the last time quite freely, thus producing very many flowers, fruits and seeds. The seeds fall down between the spiny stems to the ground. The dying plant rots away, producing moisture that helps the seeds germinate, and they then grow up between the protecting spines. The next time you are on the desert, gently lift up the edge of one of these decayed clustered plants and you may see the small seedlings underneath.

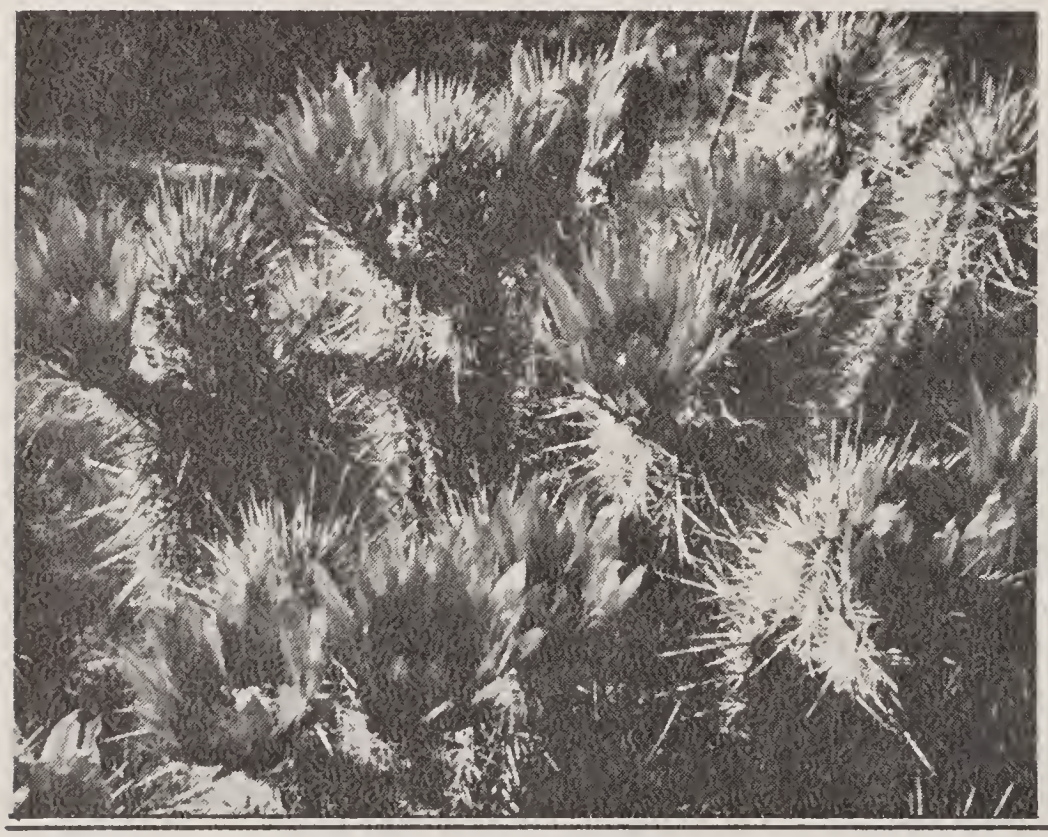
Type locality: Superior, Arizona.

Distribution: Gravel or rocky desert slopes at 1000-2000 ft. elevation in central Arizona.

REFERENCES

Benson, Cacti of Arizona
Earle, Cacti of the Southwest

—WHE



A large flowering cluster of *Echinocereus boycethompsoni* photographed near Superior, Arizona.

This year's Christmas decorations at the Garden were white-sprayed Ocotillo stems, "planted" in sand and decorated with Christmas tree ornaments. Our volunteer exterior decorators were Thelma McDougall, Helen Seder and Ann McGill. Thanks, ladies.

ASPECTS OF THE DESERT

Most impressive of all the rock formations in the Navajo Reservation's Monument Valley, Agathlan Peak is a volcanic neck, a pillar of lava, rising 1125 feet above the high valley's floor to an elevation of 6825 feet. The Navajo name means roughly (and oddly) "scratching post".

Arizona Wildflower

WILD MORNING-GLORY
Evolvulus arizonicus

Morning-Glory Family
Convolvulaceae

Wildflowers of a pure blue are perhaps more admired and remembered than those of other colors. The bluebell of Scotland, Australia's blue Leschenaultia, and this native morning glory are all a clear bright blue that contrasts with the green of foliage and grass and stands out against the lighter-blue sky. The flower need not be large nor have a particularly dramatic shape — this morning glory hasn't, but Kearney & Peebles calls it one of Arizona's most beautiful wildflowers.

Evolvulus arizonicus is found in central and southeast Arizona at elevations of 3500 to 5000 ft. It is a small, sun-loving perennial member of the morning-glory family, but, unlike the true morning-glories, it is an erect, spreading plant, not a twining vine.

Small and unobtrusive, *E. arizonicus* is lovely when it blooms.

The wheel-shaped flower is actually half the size shown here.

Stems average about twelve inches long. They are slender, and the alternate leaves are quite small. Because of this, the flowers seem large by comparison, though they are only a half-inch in diameter. The inflorescence is a very open, leafy, terminal panicle. Flowers are rotate (wheel-shaped) and flattish, not funnelform as true morning-glory flowers are. The color is a deep sky-blue, as mentioned before, although an occasional plant is found with white blossoms. Flowering takes place from March through October.

Distribution: Plains, hillsides and mountains of the Upper and Lower Sonoran Zones. Graham and Yavapai counties in Arizona, south into northern Mexico. Also Argentina.

REFERENCES

Dodge, Flowers of the Southwest Deserts
Kearney & Peebles, Arizona Flora
Rickett, Wild Flowers of the United States, Vol. IV
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

—LD

DWARF BARREL
Thelocactus lophothele

Cactaceae

Hidden among the rocks and debris on the hillsides in Chihuahua and Coahuila, one finds this small globose plant, well camouflaged to blend in with the terrain. Only its yellow flowers during May will reveal its hiding places.

Thelocactus belongs in the subtribe Coryphanthanae. Dr. Carl Schumann used Thelocactus as a subgenus of Echinocactus.

Salm-Dyck described the plant as **Echinocactus lophothele** in Allg. Gartenz. 18:395. 1850. Britton & Rose in 1922 assigned it to *Thelocactus lophothele* in the Bulletin of the Torrey Club.

The plant is usually a simple plant five to ten inches high and three to four inches in diameter, but will develop irregular clusters of three to five plants. Its grayish or glaucous nipples form an irregular surface pattern. Nipples are short, stout and wide, with depressed areoles in the flattened tubercles, each bearing three to five stout radial spines one-half to two inches long. There are usually no central spines. Flowers are about two inches wide, yellow to orange in color, and blossom during May and early June. Fruits are fairly smooth, dry, and dehisce the black seeds through a basal pore. Care must be used in attempting to recover the seeds when removing the fruit, as the seeds tend to spill over the plant when the fruit is lifted.

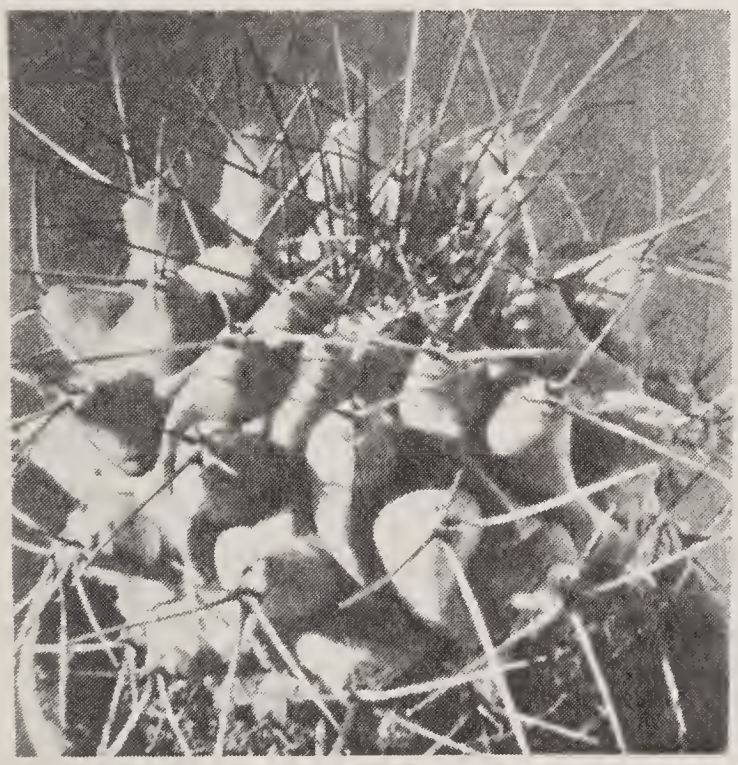
Type locality: Near the city of Chihuahua.

Distribution: Listed in many books as Chihuahua, Mexico, but we have collected this cactus in the states of both Chihuahua and Coahuila, Mexico.

REFERENCES

Backeberg, Die Cactaceae
Bravo, Las Cactaceas de Mexico
Britton & Rose, Cactaceae

—WHE



Note the very stout and long spines on this small *T. lophothele*.

Short-spined T. lophothele collected at Parras de la Fuente, Coahuila

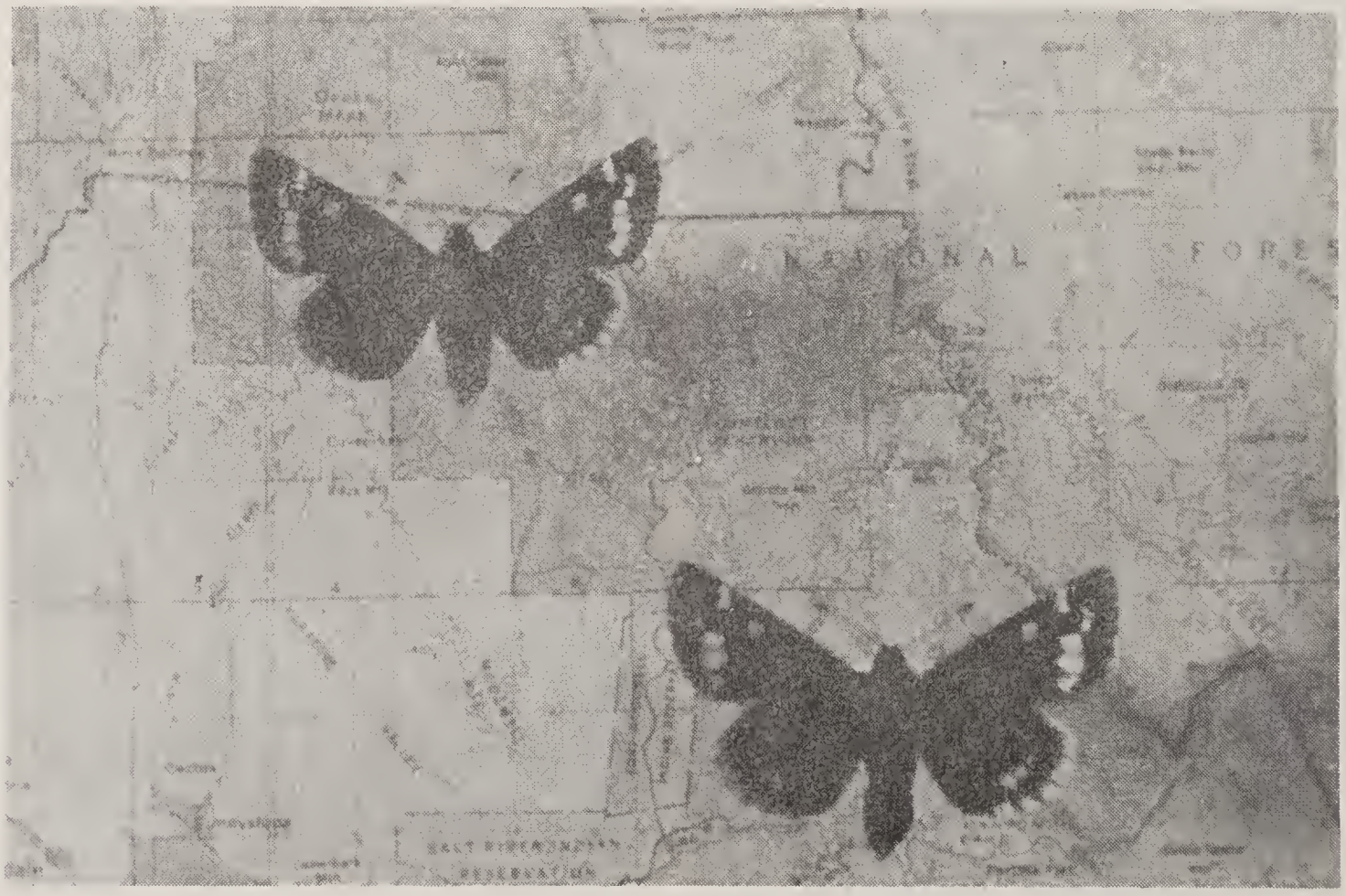
THE YUCCA-FEEDING GIANT SKIPPERS OF ARIZONA (LEPIDOPTERA: MEGATHYMIDAE: MEGATHYMINAE)

By Ronald S. Wielgus

The giant skippers of the genus **Megathymus** are found closely associated with their larval foodplants, various species of **Yucca**. These butterflies are restricted to those portions of the United States and Mexico where **Yucca** plants make up a distinct part of the native flora. Thus, in the United States, these butterflies are confined to the southern and southwestern regions.

The stronghold of the genus appears to be the southwestern states and the extreme northern part of Mexico. For it is here that the greatest amount of speciation can be found. By far, the greatest array of species are found in the state of Texas. This is due, in part, to the many species of **Yucca** that inhabit that state. Speciation in the genus **Megathymus** seems to be directly correlated with larval foodplant preference.

At the present time, one species and four subspecies of **Megathymus** have been recorded from Arizona. These are **Megathymus streckeri** (Skinner), **Megathymus coloradensis navajo** Skinner, **Megathymus coloradensis arizonae** Tinkham, **Megathymus ursus ursus** Poling, and a recently discovered subspecies of **Megathymus ursus** now being described (Wielgus, 1971, in press). The apparent paucity of speciation of this genus in Arizona is perhaps more the result of a poorly known insect fauna than a lack of foodplant species. Only recently have lepidopterists become interested in this genus but, as yet, serious workers are few. Wielgus (1971) has shown that one subspecies, **navajo**, has an extensive range in Arizona, attributable for the most part to its larval preference for two species of **Yucca**. Still awaiting detailed fieldwork are large areas of western Yavapai, southern and extreme northern Mohave and Coconino, and Navajo and



Adult female specimens of *M. c. navajo* superimposed on map of Arizona. Specimens are shown placed over localities on map where collected as larvae.

Colony of *Yucca thornberii* McKelvey south of Mountain View, Pima County, Arizona. Type locality for *Megathymus coloradensis arizonae* Tinkham.

Apache counties. It has been the experience of this author that, wherever a colony of **Yucca** has been investigated, evidence indicating the presence of a species of **Megathymus** has been found, with but one exception. The exception has been the vast colony of **Yucca brevifolia** Engelmann which is found northwest of Wickenburg. The author has investigated this colony on two occasions with negative results. However, it is believed that continued investigation will ultimately reveal the presence of a **Megathymus** there.

The butterflies of this genus are unique in that the larvae are borers in the caudex of **Yucca** plants. In feeding, the larvae excavate burrows in the caudex from six to twelve inches or more in depth. Generally, only one larva will be found to inhabit a **Yucca** plant or offshoot. Evidence of larval activity is indicated by the dead, yellowed appearance of the **Yucca**, the leaves of which will tend to droop and form a flattened rosette. In the center of the plant the larva constructs a silken structure over the burrow opening, which is commonly known as a "tent". This tent affords protection against the entry of parasites or other predators and is enlarged throughout larval development. At the base of the tent, and oftentimes incorporated in it, will be a heavy accumulation of frass. Tents over burrows harboring viable larvae will generally be light brown in color with the apex closed. The larval frass, too, will be of the same color. Tents over burrows of larvae that have already completed metamorphosis will appear gray and weathered; the apex will be open and most often collapsed inwardly.

The life cycle involves the greater part of a year and, though the adults may, individually, live for less than a week, the larval period usually extends through several months. Pupal duration is on the order of twenty to thirty days during which time the pupa, highly mobile, can propel itself upward or downward in the burrow. Movement appears to be in response to changes in temperature, humidity and barometric pressure.

The adults of **navajo** and **arizonae** emerge in the spring, generally from February

through April, **streckeri** in late May through June and **ursus** from June through August. Emergent times are not exact and vary from year to year according to climatic conditions and elevations.

(To be concluded in January issue)

Larva of *M. c. navajo* shown exposed in Yucca plant taken from lower north slope of Pinal Peak, Gila County, Arizona.

GARDEN ACTIVITIES

DECEMBER

Wed.	1st	CLASSES — Cultivation of Trees and Shrubs	3 & 8 P.M.
Thurs.	2nd	LECTURE — Arizona Scenics	3:00 P.M.
Tues.	7th	CACTOMANIACS — Christmas Meeting (Members' Photos)	8:00 P.M.
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Thurs.	30th	LECTURE — Arizona Trees and Shrubs	3:00 P.M.

JANUARY

Tues.	4th	CACTOMANIACS — "Hydroponic Growing through Hydroculture", R. J. Galliva, Hydroculture, Inc.	8:00 P.M.
Wed.	5th	CLASSES — Desert Plants	3 & 8 P.M.
Thurs.	6th	LECTURE — Arizona Birds	3:00 P.M.
Wed.	12th	CLASSES — Succulent Plants	3 & 8 P.M.
Thurs.	13th	LECTURE — Arizona Scenics	3:00 P.M.
Wed.	19th	CLASSES — Culture of Succulent Plants	3 & 8 P.M.
Thurs.	20th	LECTURE — Collecting in Mexico	3:00 P.M.
Tues.	25th	PHOENIX BONSAI SOCIETY — How to do Rock Plantings (slides)	7:30 P.M.
Wed.	26th	CLASSES — Desert Trees and Shrubs	3 & 8 P.M.
Thurs.	27th	LECTURE — Arizona Cacti	3:00 P.M.